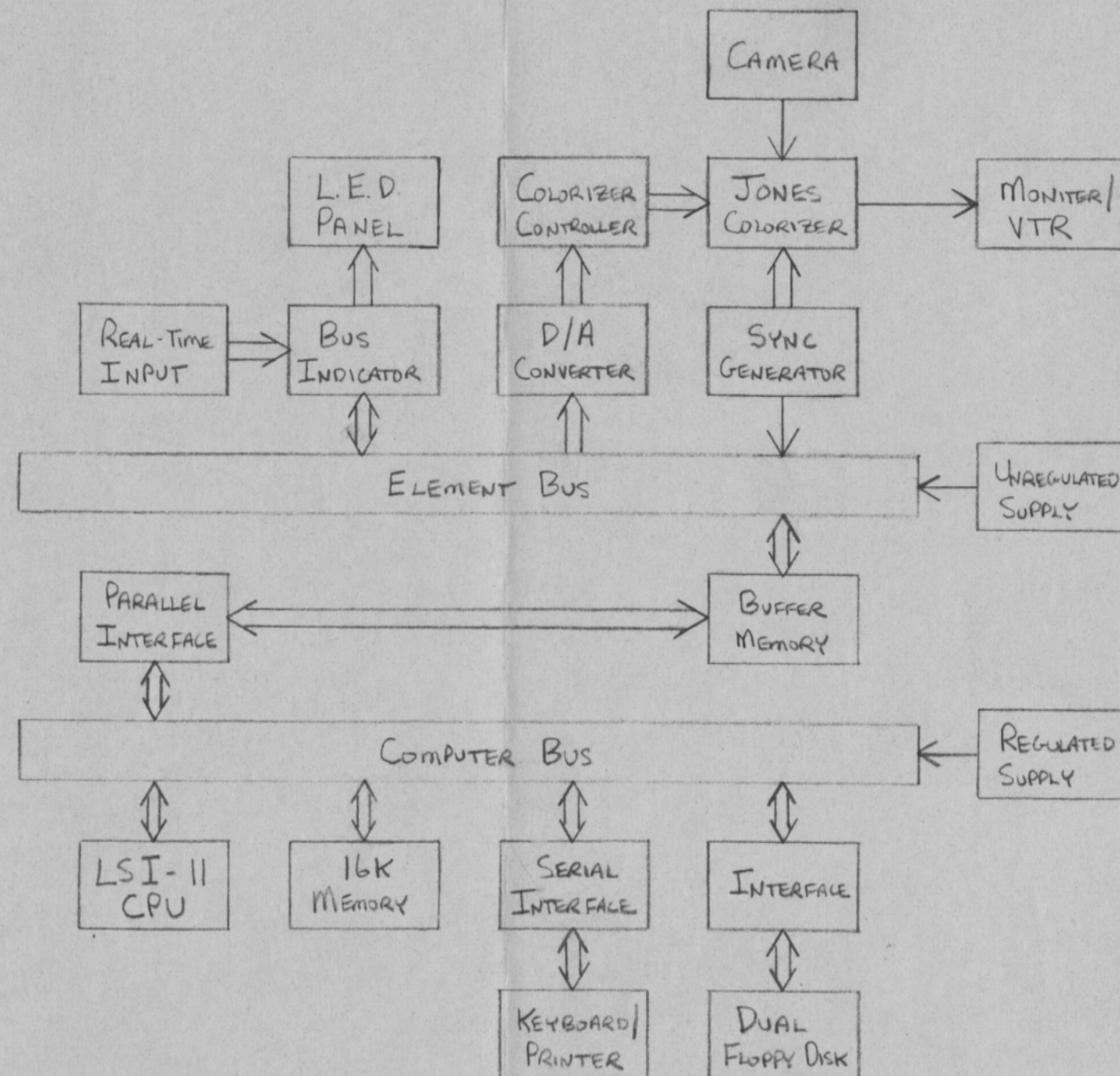


EXPERIMENTAL TV CENTER, LTD.
BINGHAMTON, N.Y.
COMPUTER - BASED
PROCESSING VIDEO SYNTHESIZER
SYSTEM DIAGRAM, 9/77 R.B.



EXPERIMENTAL TV CENTER, LTD.
BINGHAMTON, N.Y.

COMPUTER PROJECT

ELEMENT BUS POWER SUPPLY

6/77 RICH BREWSTER

PAGE 1 OF 1

PARTS LIST:

TRANSFORMER - BASLER BE12696-001

2 BRIDGE RECTIFIERS 200 PIV 12 AMP

1 BRIDGE RECTIFIER 400 PIV 25 AMP

3 CHOKES, 20 AMP, $\leq .05$ OHM

4 CAPACITORS, 3700 MFD AT 75V

2 CAPACITORS, 10800 MFD AT 20V

3 RESISTORS, 2000 OHM $\frac{1}{2}$ WATT

1 FUSE HOLDER w/ 1 AMP SLO-BLO FUSE

3 CAPACITORS, .01 MFD 100V MYLAR

3 CAPACITORS, .1 MFD 600V

1 NEON PILOT LAMP ASSEMBLY

1 S.P.S.T. TOGGLE SWITCH, 6 AMP 120V

1 LINE CORD, 3 WIRE, 120V

1 CINCINNATI-JONES CONNECTOR, 6 PIN,
CHASSIS MOUNTED FEMALE

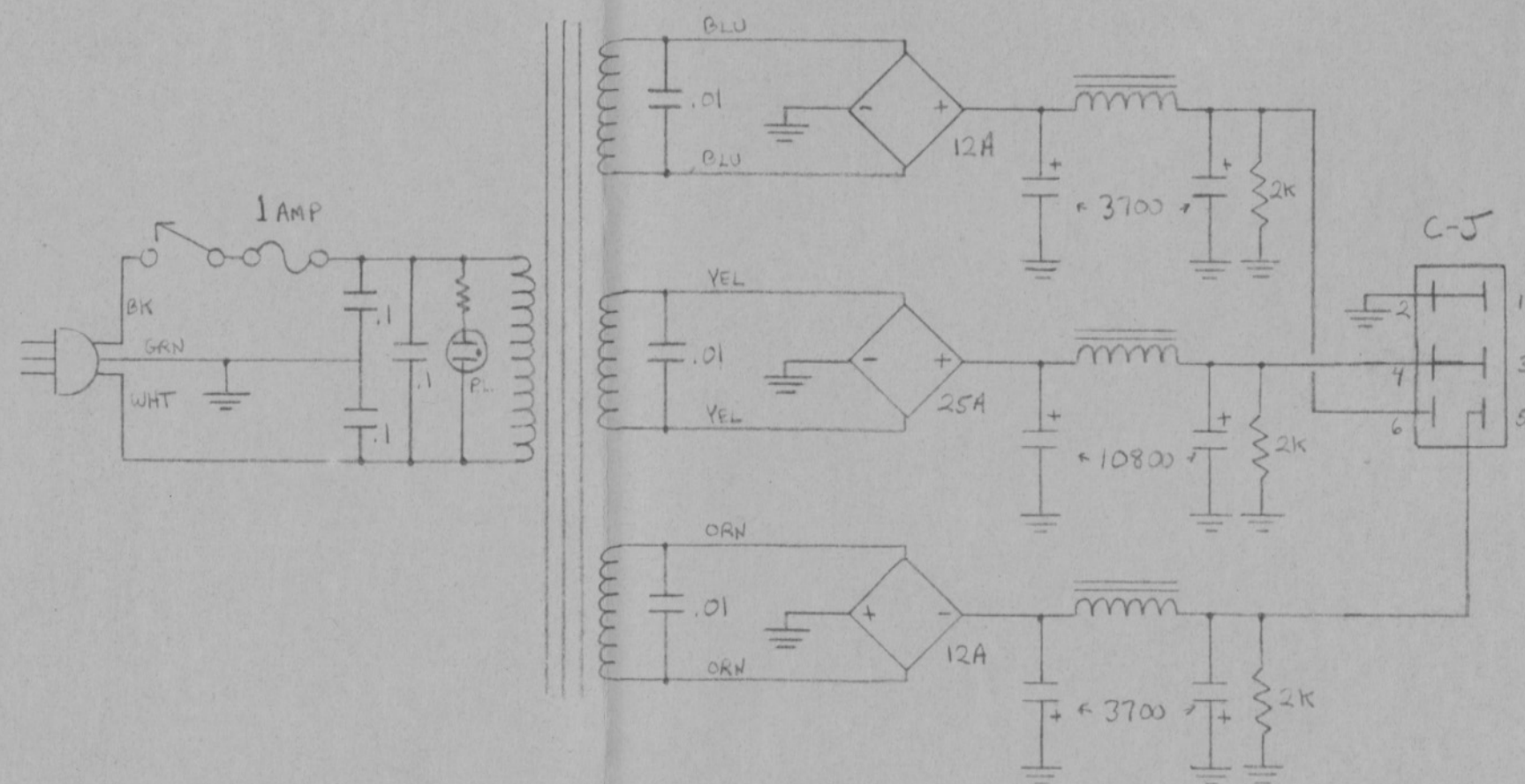
1 ALUMINUM CHASSIS 3" x 7" x 15"

CABLE PARTS:

1 C-J MALE, CABLE MOUNT, 6 PIN

1 C-J FEMALE, CABLE MOUNT, 6 PIN

10' 7-CONDUCTOR, 18 GAUGE CABLE



| CONNECTOR | CABLE | VOLTAGE | CURRENT |
|-----------|---------------|---------|---------|
| 1, 2 | BLK, GRN, BRN | GND | |
| 3, 4 | WHT, RED | +9V | 6A |
| 5 | BLU* | -19V | 2A |
| 6 | ORN* | +19V | 2A |

* NOTE - THESE ARE THE CABLE COLORS, NOT
THE TRANSFORMER LEADS WHICH HAPPEN TO
BE THE OPPOSITE COLORS.

EXPERIMENTAL TV CENTER, LTD.
 BINGHAMTON, N.Y.
 COMPUTER PROJECT 9/77 R.B.
 BUFFER MEMORY, PAGE 2 OF 3

PARTS LIST:

- 1 VECTOR 8800V UNIVERSAL 100-PIN PLUGBOARD
- 38 16-PIN DIP WIRE WRAP SOCKETS
- 10 14-PIN " " " "
- 1 24-PIN " " " "
- 4 HEAT SINKS
- 1 BERG H-854 40-PIN CONNECTOR
- 2 LM1340T-5 REGULATOR
- 4 SN7400N QUAD 2-INPUT NAND
- 2 SN7402N QUAD 2-INPUT NOR
- ✓ 1 SN7404N HEX INVERTER
- ✓ 1 SN7404N SCHOTTKY HEX INVERTER
- ✓ 1 SN7430N 8-INPUT NAND
- ✓ 1 SN7474N DUAL D FLIP FLOP
- ✓ 1 SN74154N 4-LINE TO 16-LINE DECODER
- ✓ 3 SN74157N QUAD 2:1 DATA SELECTOR
- ✓ 4 SN74161N ASYNCHRONOUS 4-BIT COUNTER
- ✓ 8 DM8097N TRI-STATE HEX BUFFER
- ✓ 6 N8T97N HIGH-SPEED TRI-STATE HEX BUFFER
- ✓ 1 DM8160N 6-BIT COMPARATOR
- ✓ 16 21L02 LOW POWER 1024x1 STATIC RAM
- 2 22µf 25V ELECTROLYTIC CAPACITORS
- 2 10µf 50V " "
- 12 .1µf 35V TANTALUM " "
- 1 .01µf 100V MYLAR " "
- 1 .002µf " DISK " "
- 1 .001µf " " " "
- 1 330pf " SILVER MICA " "
- 2 51Ω 1/4WATT RESISTORS
- 3 100Ω " " "
- 3 1K " " "
- 3 10K " " "

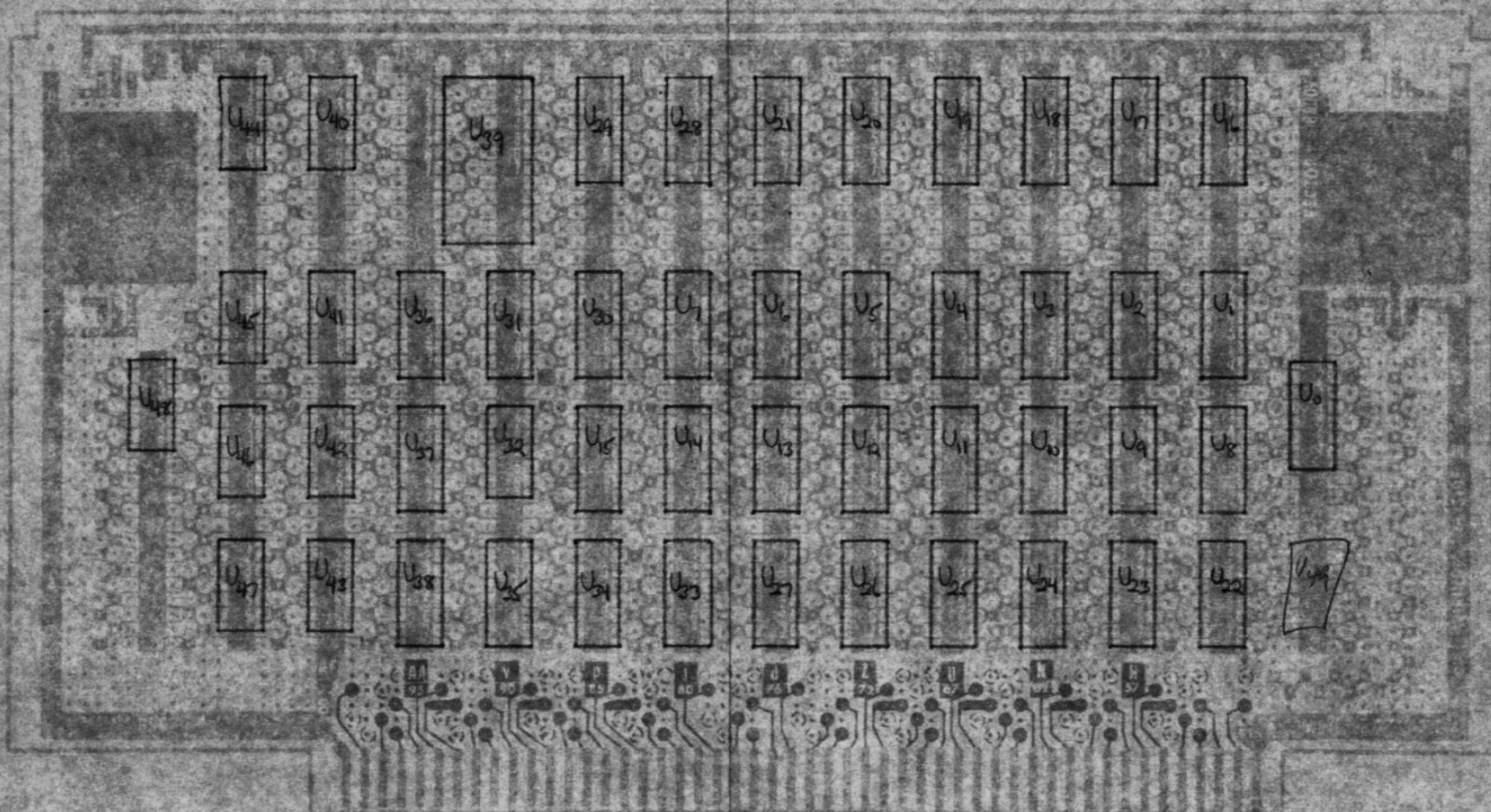
POWER CONSUMPTION:

+9VDC @

| NUMBER | CHIP | LOCATION | V _{CC} PIN | GND PIN |
|-----------------|-------|----------|---------------------|---------|
| U ₀ | 21L02 | BCZ | 10 | 9 |
| U ₁ | 21L02 | CY | 10 | 9 |
| U ₂ | 21L02 | CX | 10 | 9 |
| U ₃ | 21L02 | CW | 10 | 9 |
| U ₄ | 21L02 | CV | 10 | 9 |
| U ₅ | 21L02 | CT | 10 | 9 |
| U ₆ | 21L02 | CS | 10 | 9 |
| U ₇ | 21L02 | CR | 10 | 9 |
| U ₈ | 21L02 | BY | 10 | 9 |
| U ₉ | 21L02 | BX | 10 | 9 |
| U ₁₀ | 21L02 | BW | 10 | 9 |
| U ₁₁ | 21L02 | BV | 10 | 9 |
| U ₁₂ | 21L02 | BT | 10 | 9 |
| U ₁₃ | 21L02 | BS | 10 | 9 |
| U ₁₄ | 21L02 | BR | 10 | 9 |
| U ₁₅ | 21L02 | BP | 10 | 9 |
| U ₁₆ | 8097 | DY | 16 | 8 |
| U ₁₇ | 8097 | DX | 16 | 8 |
| U ₁₈ | 8097 | DW | 16 | 8 |
| U ₁₉ | 8T97 | DV | 16 | 8 |
| U ₂₀ | 8T97 | DT | 16 | 8 |
| U ₂₁ | 8T97 | DS | 16 | 8 |
| U ₂₂ | 8097 | AY | 16 | 8 |
| U ₂₃ | 8097 | AX | 16 | 8 |
| U ₂₄ | 8097 | AW | 16 | 8 |
| U ₂₅ | 8T97 | AV | 16 | 8 |
| U ₂₆ | 8T97 | AT | 16 | 8 |
| U ₂₇ | 8T97 | AS | 16 | 8 |
| U ₂₈ | 74157 | DR | 16 | 8 |
| U ₂₉ | 74157 | DP | 16 | 8 |
| U ₃₀ | 74157 | CP | 16 | 8 |
| U ₃₁ | 8160 | CN | 16 | 8 |
| U ₃₂ | 7430 | BN | 14 | 7 |
| U ₃₃ | 8097 | AR | 16 | 8 |
| U ₃₄ | 8097 | AP | 16 | 8 |
| U ₃₅ | 74161 | AN | 16 | 8 |
| U ₃₆ | 74161 | CM | 16 | 8 |
| U ₃₇ | 74161 | Bm | 16 | 8 |
| U ₃₈ | 74161 | AM | 16 | 8 |
| U ₃₉ | 74154 | DNM | 24 | 12 |
| U ₄₀ | 7400 | DL | 14 | 7 |
| U ₄₁ | 7400 | CL | 14 | 7 |
| U ₄₂ | 7400 | BL | 14 | 7 |
| U ₄₃ | 7400 | AL | 14 | 7 |
| U ₄₄ | 7404 | DK | 14 | 7 |
| U ₄₅ | 7402 | CK | 14 | 7 |
| U ₄₆ | 7402 | BK | 14 | 7 |
| U ₄₇ | 7404 | AK | 14 | 7 |
| U ₄₈ | 7474 | GCJ | 14 | 7 |

| BERG H-854 | | | |
|-----------------|-----|--------|-----------------|
| WIRING VIEW | | | |
| SIGNAL | PIN | SIGNAL | PIN |
| GND | B | A | GND |
| D ₁₅ | D | C | D ₁₄ |
| D ₁₃ | F | E | D ₁₂ |
| D ₁₁ | J | H | D ₁₀ |
| D ₉ | L | K | D ₈ |
| D ₇ | N | M | D ₆ |
| D ₅ | R | P | D ₄ |
| D ₃ | T | S | D ₂ |
| D ₁ | V | U | D ₀ |
| GND | X | W | GND |
| A ₁₅ | Z | Y | A ₁₄ |
| A ₁₃ | BB | AA | A ₁₂ |
| A ₁₁ | DD | CC | A ₁₀ |
| A ₉ | FF | EE | A ₈ |
| A ₇ | JJ | HH | A ₆ |
| A ₅ | LL | KK | A ₄ |
| A ₃ | NN | MM | A ₂ |
| A ₁ | PP | QQ | A ₀ |
| READY | RR | SS | INIT |
| SPARE | TT | UU | SPARE |
| GND | VV | WW | GND |

BUFFER MEMORY



NOTES:

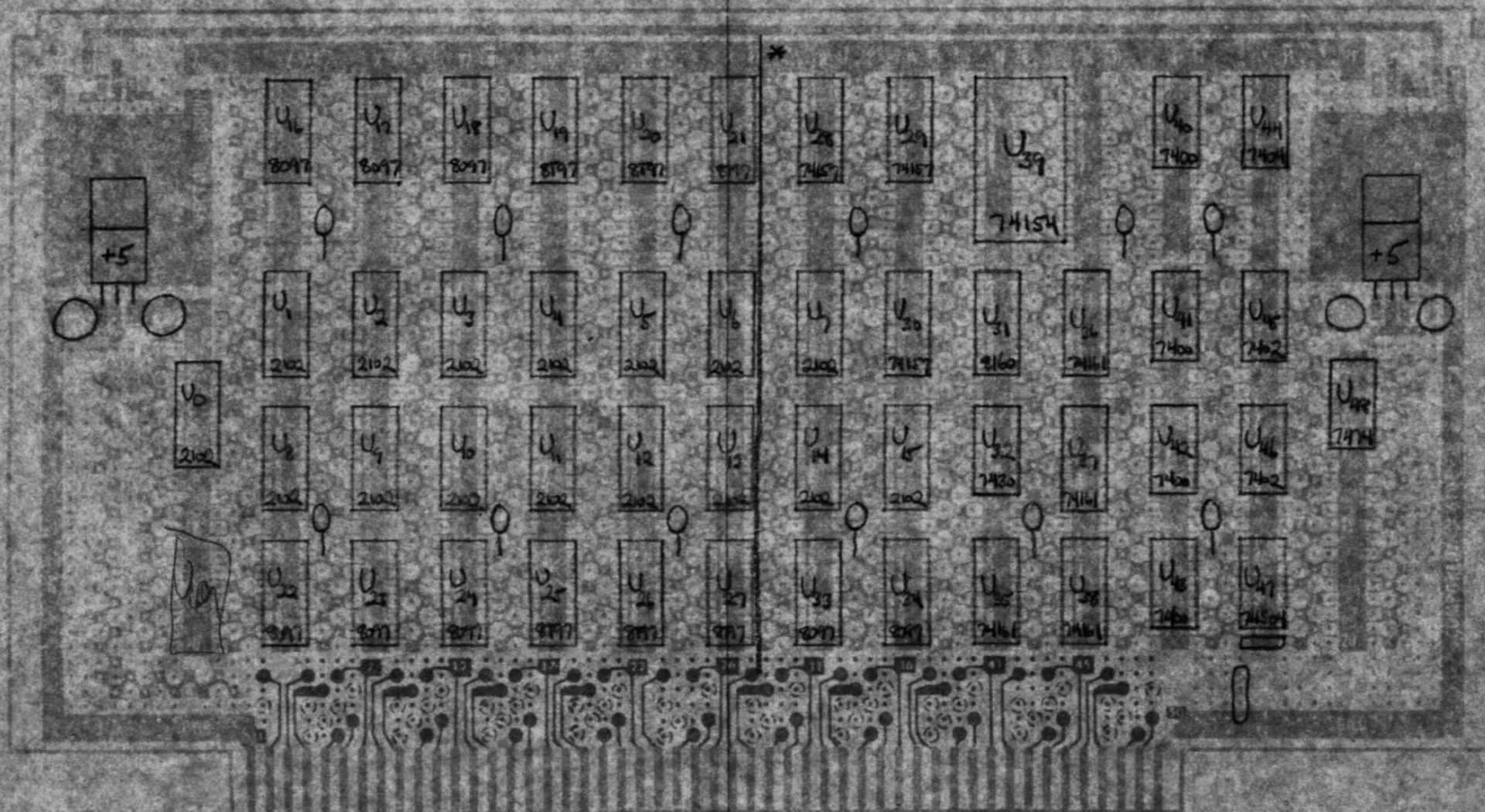
1. RECOMMENDED LOCATION FOR T46-4 TERMINALS IN POWER AND GROUND PLANES AT ROWS 23 & 25, AND RIGHT SIDE REGULATOR POSITION.
2. ZIG-ZAG BUS PADS ON POWER PLANE ARE OFFSET FROM THOSE ON GROUND PLANE.
3. DASHED CIRCLES REPRESENT CONNECTOR CONTACT PADS ON OPPOSITE SIDE OF BOARD.
4. DIPS WITH 0.3" SPAN MOUNT OVER SOLID BUS COLUMNS.
5. ZONE LETTERS A TO D ON LEFT BORDER, AND 1 TO 7 ON TOP BORDER ARE DIP ROW & COLUMN DESIGNATORS.

VECTOR D.I.P. PLUGBOARD
PATTERN .042" X 0.1" SPACED HOLES
LA13P2 LAYOUT PAPER

VECTOR ELECTRONIC CO., INC.
12460 GLADSTONE AVE.
SYLMAR, CALIFORNIA 91342



BUFFER MEMORY



NOTES:

1. RECOMMENDED LOCATION FOR T46-4 TERMINALS IN POWER AND GROUND PLANES AT ROWS 23 & 25, AND LEFT SIDE REGULATOR POSITION.
2. ZIG-ZAG BUS PADS ON POWER PLANE ARE OFFSET FROM THOSE ON GROUND PLANE.
3. DASHED CIRCLES REPRESENT CONNECTOR CONTACT PADS ON OPPOSITE SIDE OF BOARD.
4. DIPS WITH 0.3" SPAN MOUNT OVER SOLID BUS COLUMNS.
5. ZONE LETTERS A TO D ON LEFT BORDER, AND 1 TO 7 ON TOP BORDER ARE DIP ROW & COLUMN DESIGNATORS.

* POWER PLANE CUT TO SEPARATE OUTPUTS* FROM TWO +5V REGULATORS

E.T.C., LTD.
BINGHAMTON, N.Y.
9/77 R.B.
PAGE 3 OF 3

VECTOR D.I.P. PLUGBOARD
PATTERN .042" X 0.1" SPACED HOLES
LA13P1 LAYOUT PAPER

VECTOR ELECTRONIC CO., INC.
12460 GLADSTONE AVE.
SYLMAR, CALIFORNIA 91342



ELEMENT BUS

| | | | |
|----|------------------------|-----|---------|
| 1 | +9V | 51 | +9V |
| 2 | +19V | 52 | -19V |
| 3 | XRDY | 53 | SSW DSB |
| 4 | $\overline{Q1}$ | 54 | EXT CLR |
| 5 | $\overline{Q2}$ | 55 | |
| 6 | $\overline{Q3}$ | 56 | BYTE |
| 7 | ETF | 57 | DIO8 |
| 8 | CEM | 58 | DIO9 |
| 9 | CME | 59 | DIO10 |
| 10 | FTE | 60 | DIO11 |
| 11 | TR | 61 | DIO12 |
| 12 | X CLOCK | 62 | DIO13 |
| 13 | X LOAD | 63 | DIO14 |
| 14 | Y CLOCK | 64 | DIO15 |
| 15 | Y LOAD | 65 | |
| 16 | HDTTL | 66 | SCTTL |
| 17 | VDTTL SPARE | 67 | |
| 18 | STA DSB | 68 | MWRT |
| 19 | C/C DSB | 69 | PS |
| 20 | UNPROT | 70 | PROT |
| 21 | SS | 71 | RUN |
| 22 | ADD DSB | 72 | PRDY |
| 23 | DO DSB | 73 | PINT |
| 24 | Q2 | 74 | PHOLD |
| 25 | Q1 | 75 | PRESET |
| 26 | PHLDA | 76 | PSYNC |
| 27 | PWAIT | 77 | WE |
| 28 | PINTE | 78 | RE |
| 29 | A5 | 79 | A0 |
| 30 | A4 | 80 | A1 |
| 31 | A3 | 81 | A2 |
| 32 | A15 | 82 | A6 |
| 33 | A12 | 83 | A7 |
| 34 | A9 | 84 | A8 |
| 35 | D1 | 85 | A13 |
| 36 | D0 | 86 | A14 |
| 37 | A10 | 87 | A11 |
| 38 | D4 | 88 | D2 |
| 39 | D5 | 89 | D3 |
| 40 | D6 | 90 | D7 |
| 41 | DI2 | 91 | DI4 |
| 42 | DI3 | 92 | DI5 |
| 43 | DI7 | 93 | DI6 |
| 44 | SM1 | 94 | DI1 |
| 45 | SOUT | 95 | DI0 |
| 46 | SINP | 96 | SINTA |
| 47 | SMEMR | 97 | SWO |
| 48 | SHLTA | 98 | SSTACK |
| 49 | CLOCK | 99 | POC |
| 50 | GND | 100 | GND |

DON SIGNALS

| | |
|------------------|----------------------|
| $\overline{Q1}$ | } From BUFFER MEMORY |
| $\overline{Q2}$ | |
| $\overline{Q3}$ | |
| CEM | |
| CME | } From BUS INDICATOR |
| ETF | |
| FTE | |
| TR | } From CLOCK BOARD |
| VDTTL | |
| A0 - A9 | |
| D0 - D7 | |
| DIO8 - DIO15 | |

JEFF SIGNALS

| |
|-------------------------|
| X CLOCK |
| X LOAD |
| Y CLOCK |
| Y LOAD |
| HDTTL |
| SCTTL |
| WE (\overline{PWR}) |
| RE (INVERSE PDBIN) |
| BYTE |

NOTES

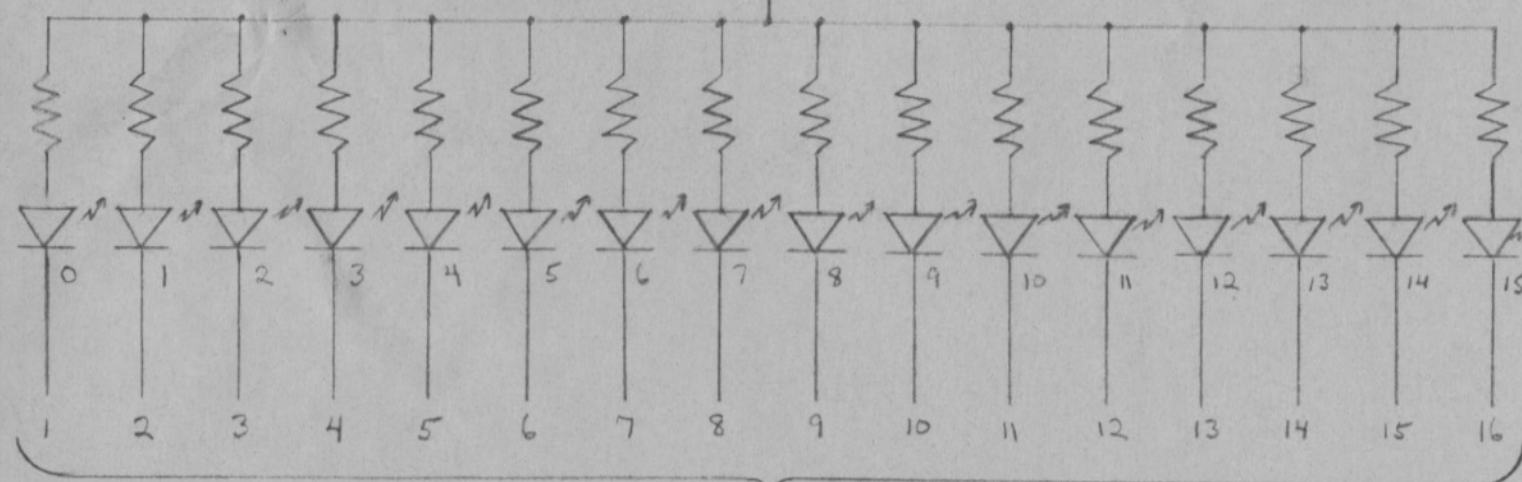
- ① PIN 17 CARRIES NEGATIVE GOING V.D. (~~DELETED~~)
TR IS THE SAME AS VDTTL.
- ② D0 - D7 ARE DATA OUT FOR ALTAIR, AND
DATA IN-OUT FOR DON'S SYSTEM.
- ③ SIGNALS OTHER THAN DON'S OR JEFF'S ARE
TAKEN FROM THE ALTAIR 8800 BUS STRUCTURE.
- ④ PINS 4-11 ARE DESIGNATED "VECTORED
INTERRUPT LINES" IN THE ALTAIR BUS.
- ⑤ $\overline{Q1}$ AND $\overline{Q2}$ ARE DON SIGNALS THAT ARE
UNRELATED TO $\overline{Q1}$ AND $\overline{Q2}$ ALTAIR SIGNALS.

EXPERIMENTAL TV CENTER, LTD.
 BINGHAMTON, N.Y.
 COMPUTER PROJECT 9/77
 ELEMENT BUS R.B.

BUS INDICATOR LED PANEL

ALL RESISTORS 910 OHMS

+5V (FROM COMPUTER BUS SUPPLY)

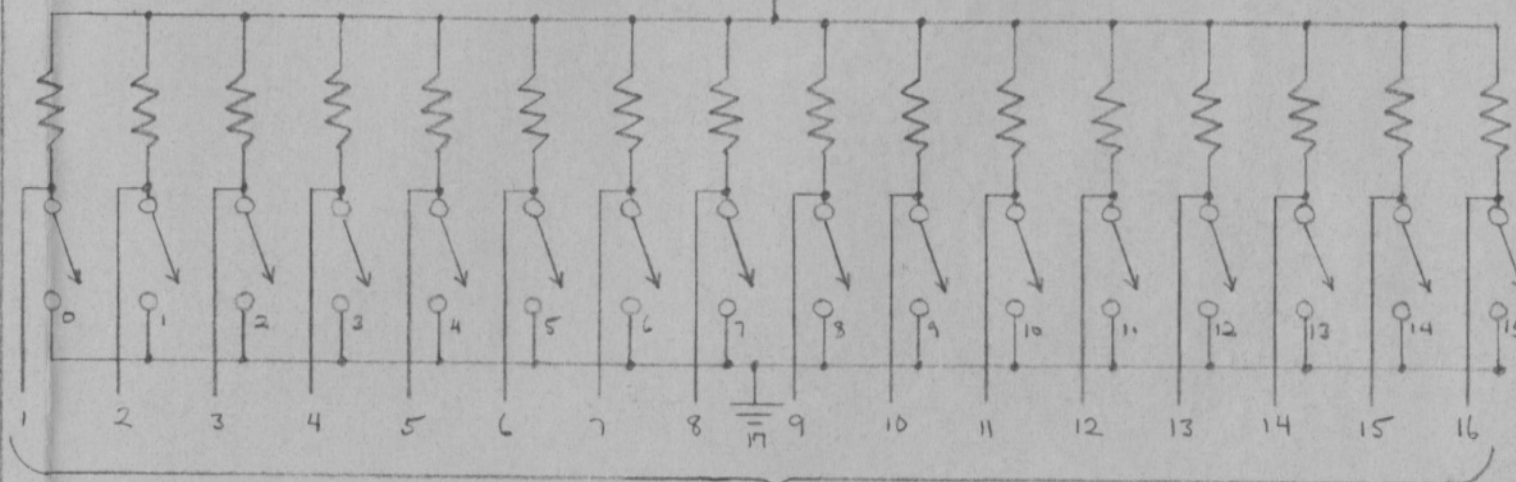


DIP PLUG

REAL TIME INPUT BOX

ALL RESISTORS 1K OHMS

+5V (PIN 18, "D" CONNECTOR)



AMPHENOL "D" CONNECTOR

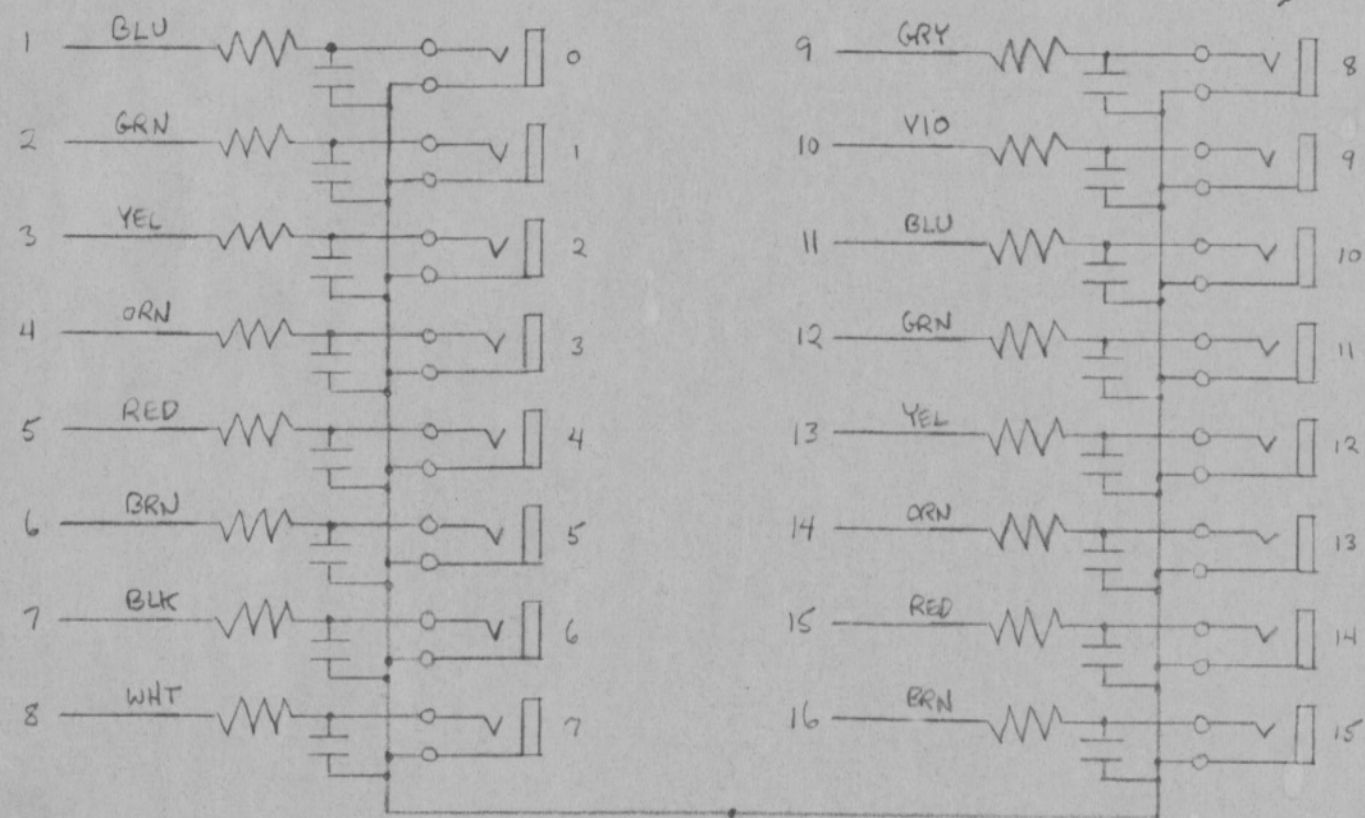
D/A OUTPUT PANEL

(MINIATURE PHONE JACKS)

.01

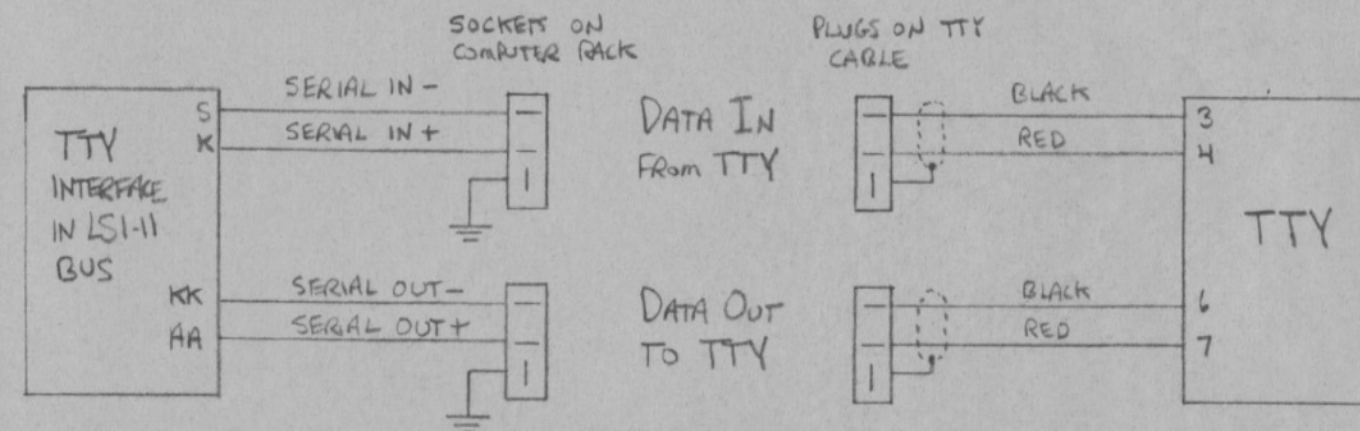
16-PIN DIP PLUG, ALL RESISTORS 1K OHMS

16 PIN DIP PLUG, ALL CAPACITORS .01



GROUNDING DIRECTLY TO D/A BOARD

TTY CONNECTIONS



EXPERIMENTAL TV CENTER, LTD.
BINGHAMTON, N.Y.
COMPUTER PROJECT

MISC. RACK WIRING
9/77 R.B.

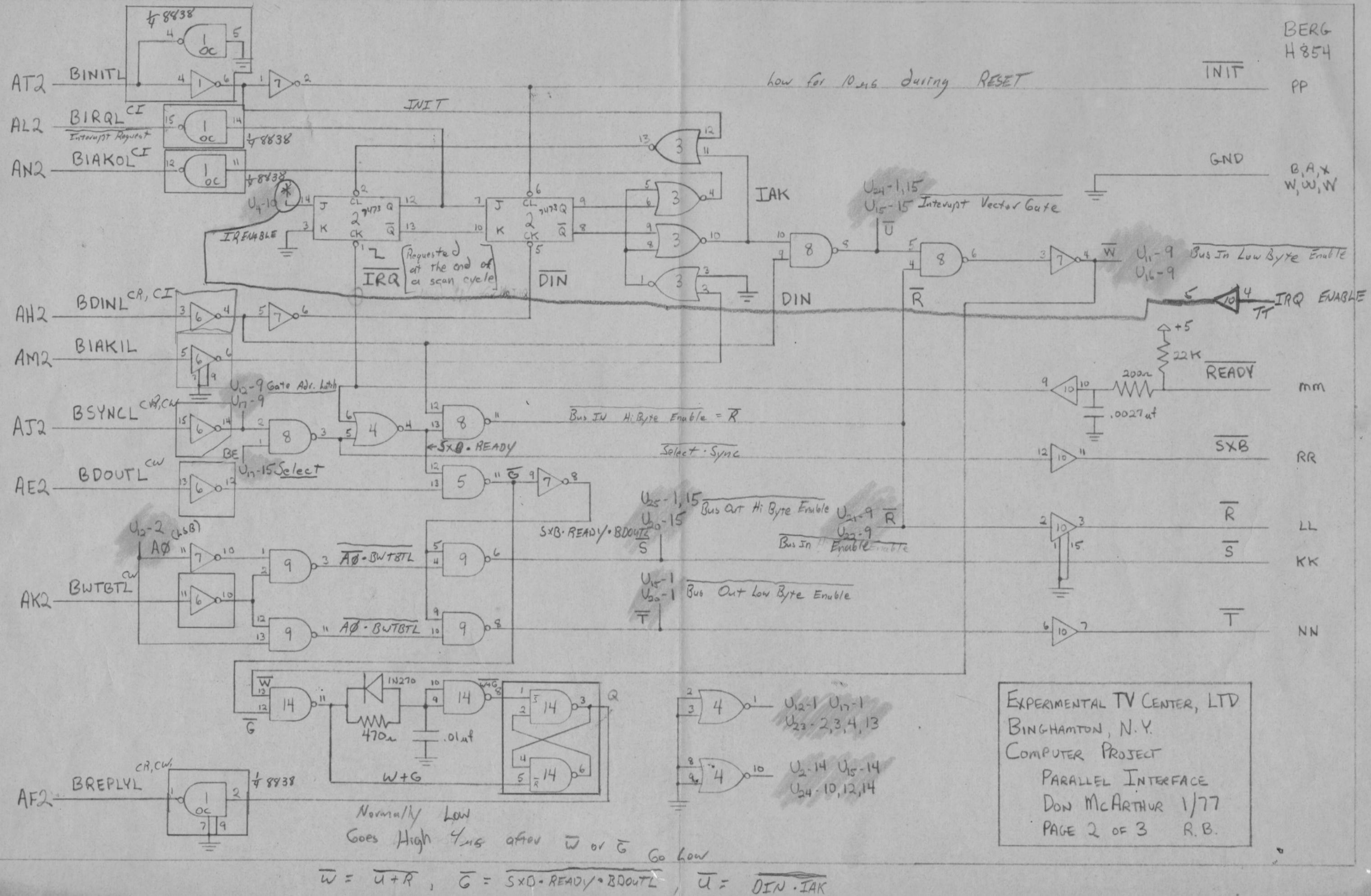
| | | | | |
|------------------------|-------------------------|--------------------------|--------------------------|-------------------------|
| U ₁ 8838 | U ₆ 8837 | U ₁₁ 8838 | U ₁₆ 8838 | U ₂₁ 8838 |
| U ₂ 7473 | U ₇ 7404 | U ₁₂ 74174 | U ₁₇ 74174 | U ₂₂ 8838 |
| U ₃ 7402 | U ₈ 7400 | | | U ₂₃ 8160 |
| U ₄ 7402 | U ₉ 7400 | U ₁₄ 74200 | | U ₂₄ 8097 |
| U ₅ 7400 | U ₁₀ 8097 | U ₁₅ 8097 | U ₂₀ 8097 | U ₂₅ 8097 |

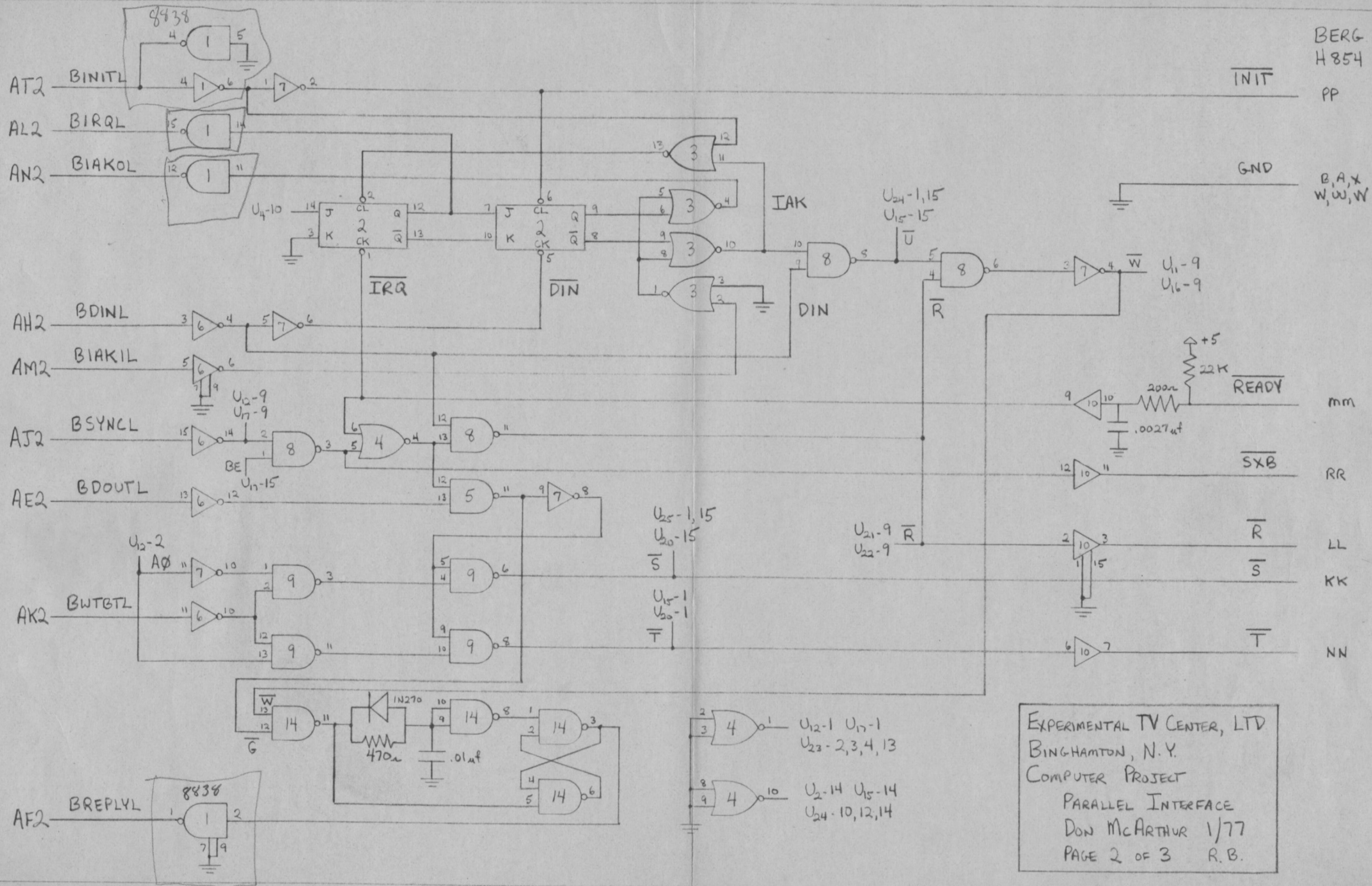
BERG H-854

3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

| QUANTITY | DESCRIPTION | Vcc Pin | GND Pin |
|----------|--|---------|---------|
| 4 | SN7400N QUAD 2-INPUT NAND | 14 | 7 |
| 2 | SN7402N QUAD 2-INPUT NOR | 14 | 7 |
| 1 | SN7404N HEX INVERTER | 14 | 7 |
| 1 | SN7473N DUAL JK MASTER/SLAVE FLIP FLOP | 4 | 11 |
| 2 | SN74174N HEX D FLIP FLOP WITH CLEAR | 16 | 8 |
| 5 | DM8097N TRI-STATE HEX BUFFER | 16 | 8 |
| 1 | DM8160N 6-BIT COMPARETER | 16 | 8 |
| 1 | DM8837N HEX UNIFIED BUS RECEIVER | 16 | 8 |
| 5 | DM8838N QUAD UNIFIED BUS TRANSCIVER | 16 | 8 |
| 1 | DIGITAL W943 PROTOBOARD | | |
| 1 | BERG H854 CONNECTOR | | |
| 1 | 1N270 GERMANIUM DIODE | | |
| 1 | 200 Ω 1/4 WATT RESISTOR | | |
| 1 | 470 Ω " " | | |
| 1 | K " " | | |
| 1 | 22K " " | | |
| 1 | 01 μ f DISK CAPACITOR | | |
| 1 | 0027 μ f " " | | |

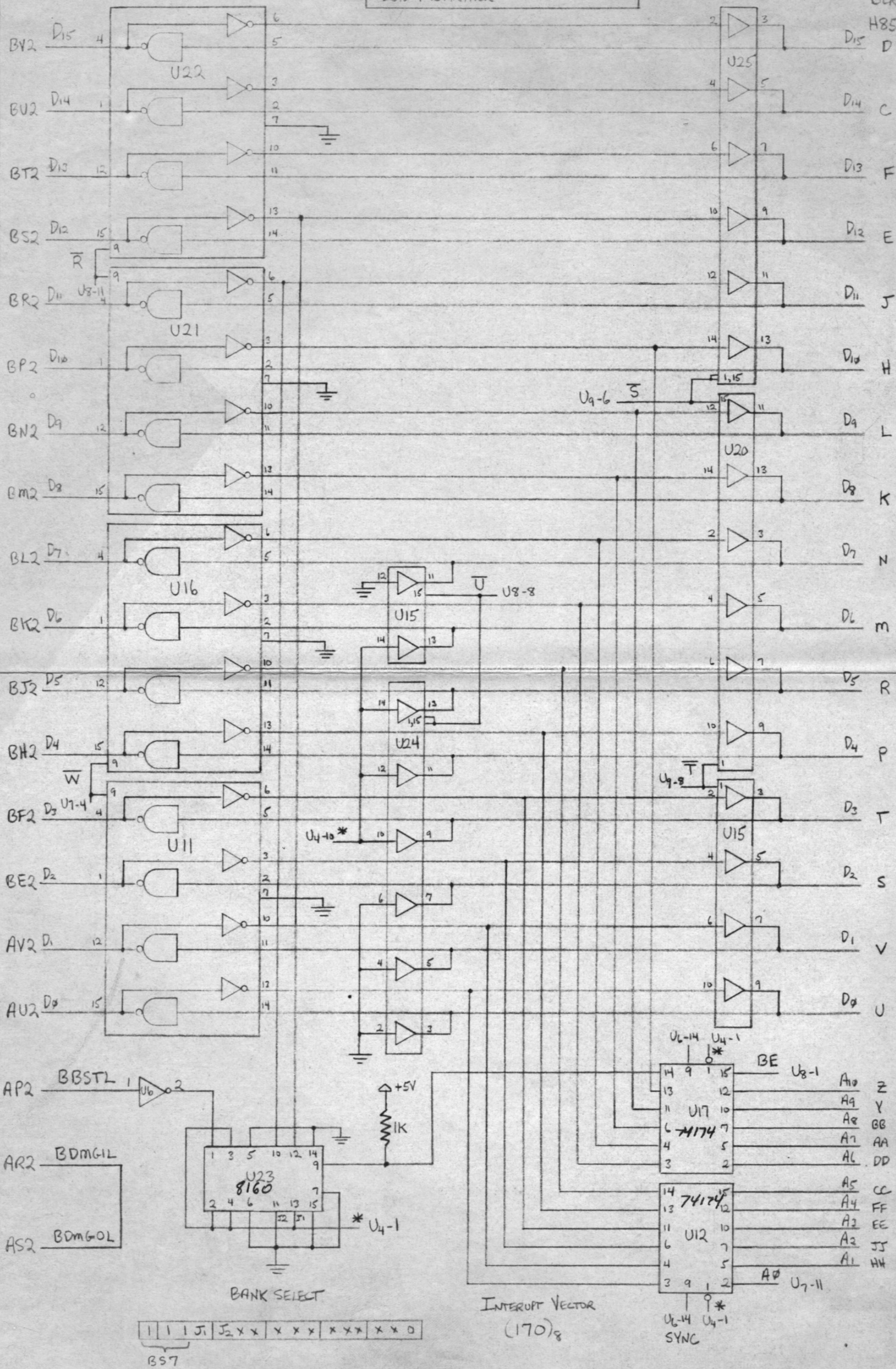
EXPERIMENTAL TV CENTER, LTD.
BINGHAMTON, N.Y.
COMPUTER PROJECT
PARALLEL INTERFACE
DON McARTHUR 1/77
PAGE 1 OF 3 R.B.





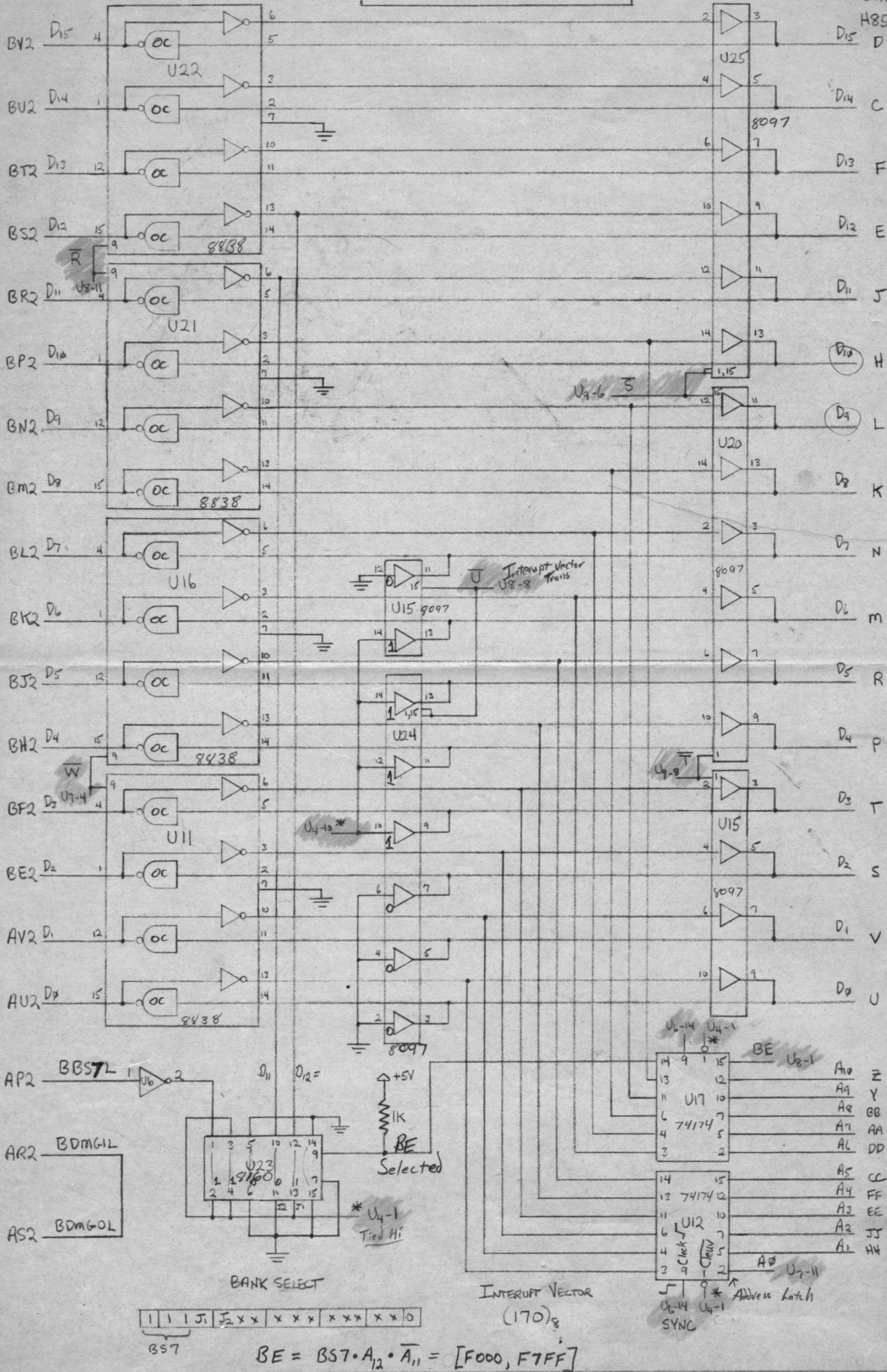
EXPERIMENTAL TV CENTER, LTD.
 PARALLEL INTERFACE 1/77
 DON McARTHUR PAGE 3 OF 3 R.B.

BERG
 H854
 D



EXPERIMENTAL TV CENTER, LTD
 PARALLEL INTERFACE 1/77
 DON McARTHUR PAGE 3 OF 3 R.B.

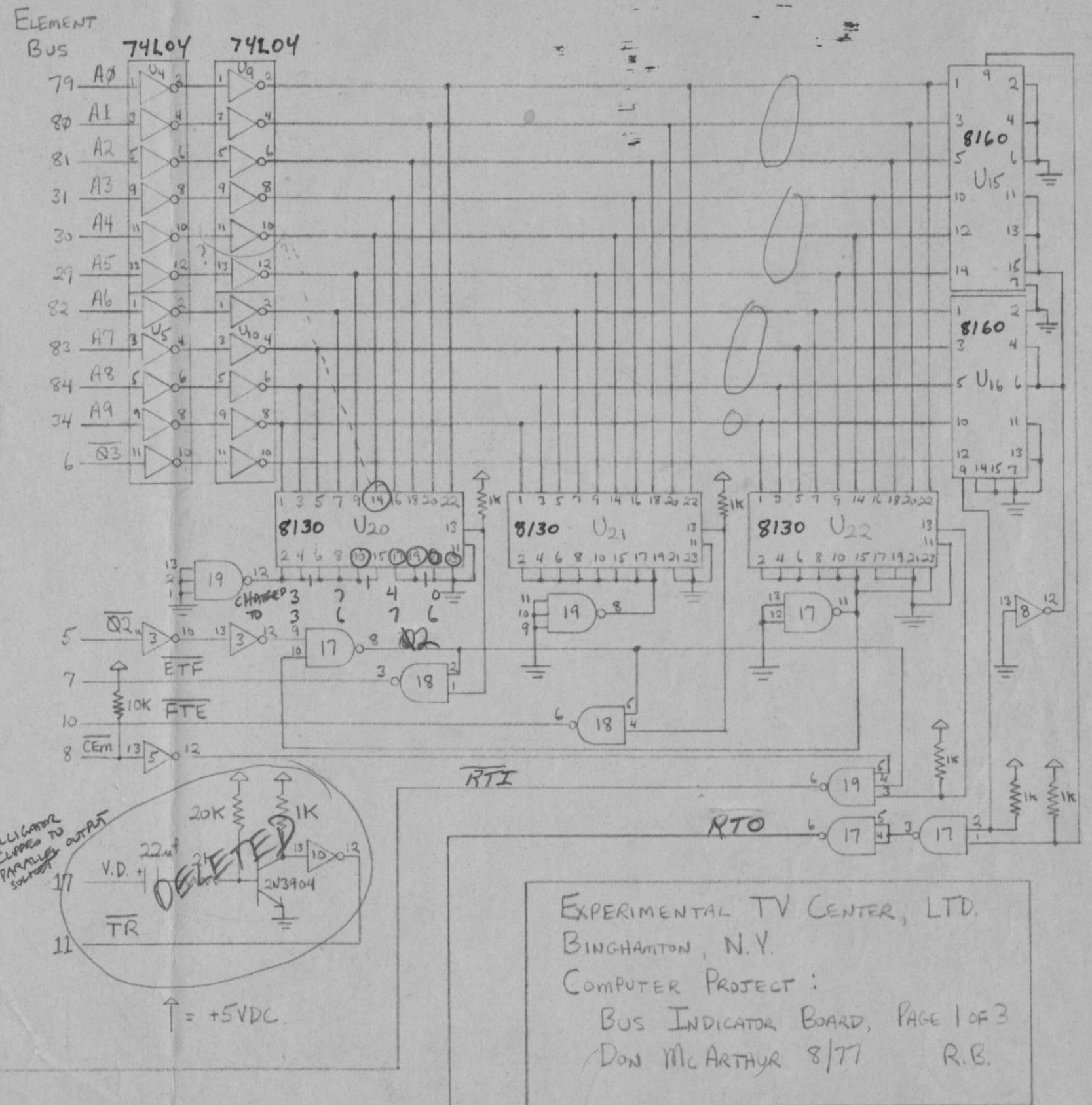
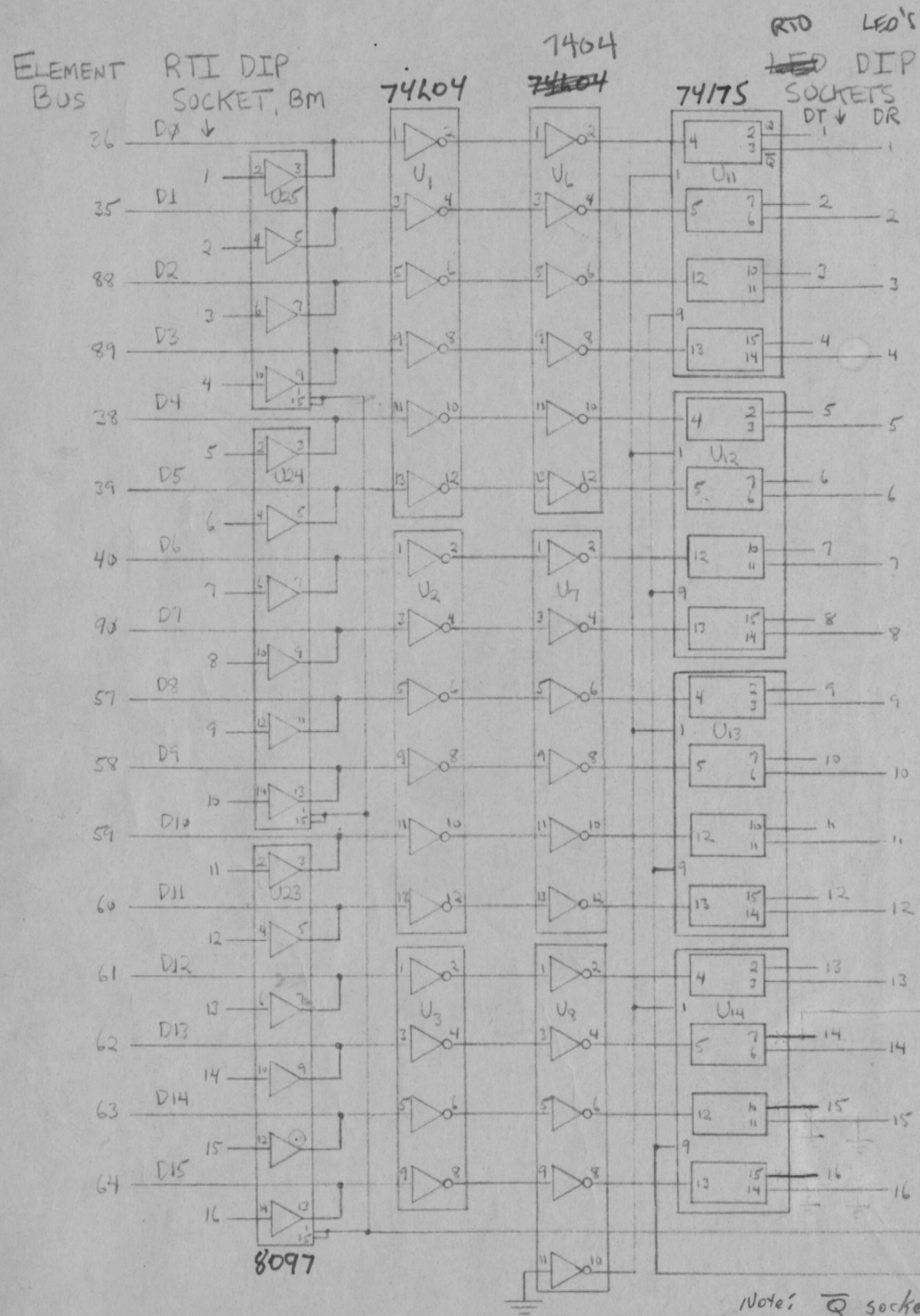
BERG
 H854
 D



BANK SELECT
 BS7

INTERRUPT VECTOR
 (170)₈

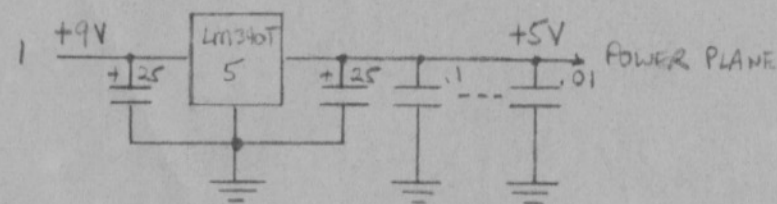
$$BE = BS7 \cdot A_{12} \cdot \bar{A}_{11} = [F000, F7FF]$$



PARTS LIST

| | |
|----|---|
| 1 | VECTOR 8800V UNIVERSAL 100-PIN PLUG-BOARD |
| 12 | 16-PIN DIP WIRE WRAP SOCKETS |
| 13 | 14-PIN DIP " " " |
| 3 | 24-PIN DIP " " " |
| 1 | HEAT SINK FOR REGULATOR |
| 1 | LM340T-5 REGULATOR |
| 1 | 2N3904 NPN TRANSISTOR |
| 1 | SN7400N QUAD 2-INPUT NAND |
| 1 | SN7403N QUAD 2-INPUT NAND, OPEN COLLECTOR |
| 1 | SN7410N TRIPLE 3-INPUT NAND |
| 5 | SN7404N HEX INVERTER |
| 5 | SN74104N HEX INVERTER |
| 4 | SN74175N QUAD D FLIP FLOP |
| 3 | DM8097N TRI-STATE HEX BUFFER |
| 3 | DM8130N 10-BIT COMPARATOR |
| 2 | DM8160N 6-BIT COMPARATOR |
| 3 | 22µf 25V ELECTROLYTIC CAPACITOR |
| 3 | .1µf 35V TANTALUM CAPACITOR |
| 10 | .01µf 100V MYLAR CAPACITOR |
| 6 | 1K 1/4 WATT RESISTOR |
| 1 | 2K 1/4 WATT RESISTOR |
| 1 | 20K 1/4 WATT RESISTOR |

| NUMBER | CHIP | LOCATION | VCC PIN | GND PIN |
|-----------------|-------|----------|---------|---------|
| U ₁ | 74L04 | AV | 14 | 7 |
| U ₂ | 74L04 | AT | 14 | 7 |
| U ₃ | 74L04 | AS | 14 | 7 |
| U ₄ | 74L04 | AR | 14 | 7 |
| U ₅ | 74L04 | AP | 14 | 7 |
| U ₆ | 7404 | BV | 14 | 7 |
| U ₇ | 7404 | BT | 14 | 7 |
| U ₈ | 7404 | BS | 14 | 7 |
| U ₉ | 7404 | BR | 14 | 7 |
| U ₁₀ | 7404 | BP | 14 | 7 |
| U ₁₁ | 74175 | CW | 16 | 8 |
| U ₁₂ | 74175 | CV | 16 | 8 |
| U ₁₃ | 74175 | CT | 16 | 8 |
| U ₁₄ | 74175 | CS | 16 | 8 |
| U ₁₅ | 8160 | CR | 16 | 8 |
| U ₁₆ | 8160 | CP | 16 | 8 |
| U ₁₇ | 7400 | CN | 14 | 7 |
| U ₁₈ | 7403 | CM | 14 | 7 |
| U ₁₉ | 7410 | CL | 14 | 7 |
| U ₂₀ | 8130 | DPN | 24 | 12 |
| U ₂₁ | 8130 | DNM | 24 | 12 |
| U ₂₂ | 8130 | DML | 24 | 12 |
| U ₂₃ | 8097 | AN | 16 | 8 |
| U ₂₄ | 8097 | AM | 16 | 8 |
| U ₂₅ | 8097 | AL | 16 | 8 |



BUFFER MEMORY ADDRESS MAP

| | | |
|--------|--|---|
| 170000 | | F000 |
| 170040 | | |
| 170076 | 16 D/A'S | |
| 171560 | BUS INDICATOR (U ₁₅ , U ₁₆) | |
| 173676 | | |
| 173740 | | |
| 173742 | FEATURE AREA | F.A. START (U ₂₀) REAL TIME INPUT (U ₂₂) F.A. STOP (U ₂₁) |
| 173770 | | |
| 173776 | | STATUS REGISTER |

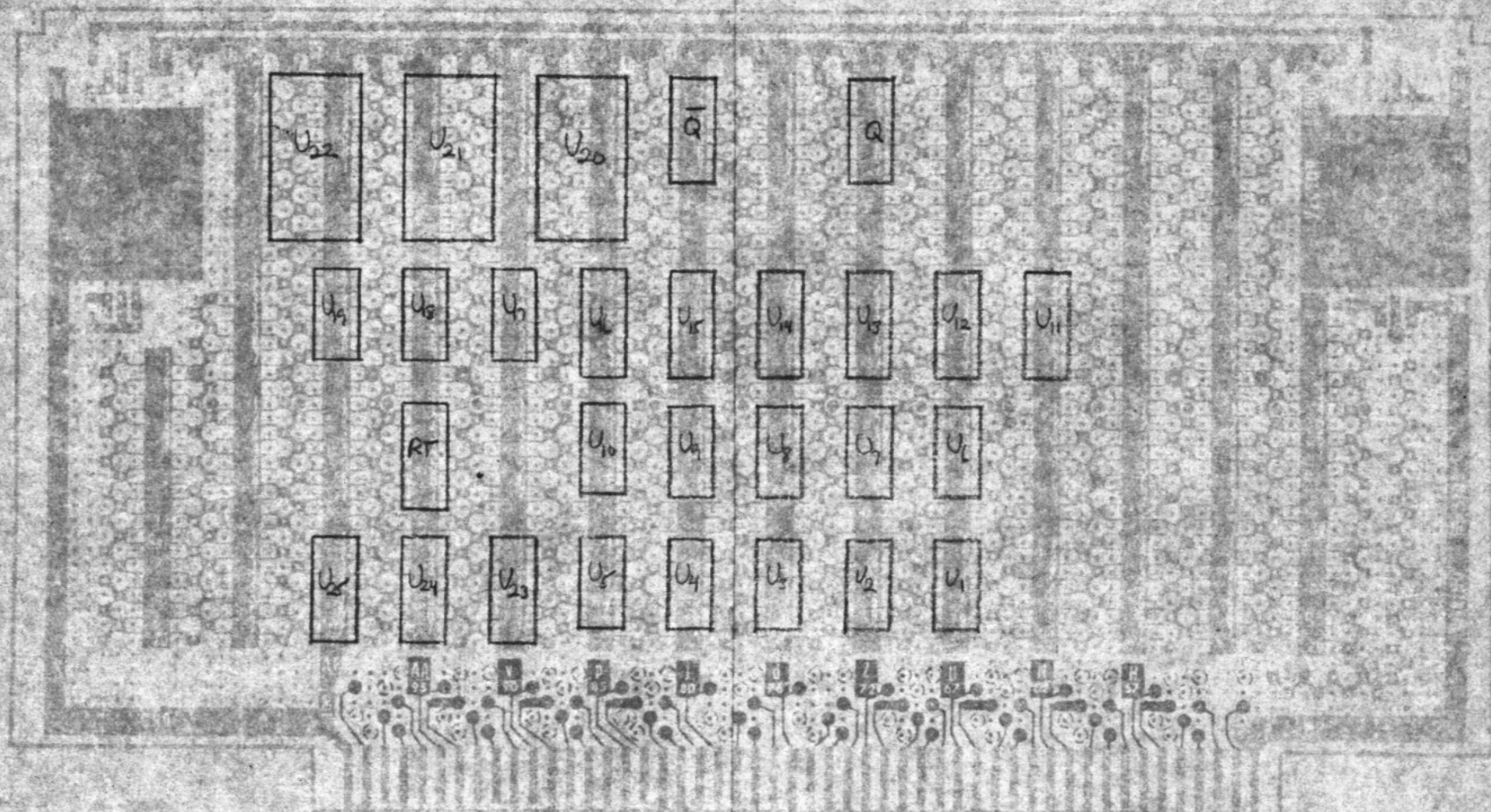
1024
Words
= 2048
Bytes

THE FOUR CIRCUITS ON THE BUS INDICATOR CARD

- ① BUS INDICATOR CIRCUIT
- ② BUFFER MEMORY MODE CONTROLLER
- ③ REAL-TIME INPUT CIRCUIT
- ④ V.D. TO TTL CONVERTER

EXPERIMENTAL TV CENTER, LTD
BINGHAMTON, N.Y.
COMPUTER PROJECT
BUS INDICATOR BOARD 8/77
DON McARTHUR
PAGE 2 OF 3 R.B.

BUS INDICATOR



NOTES:

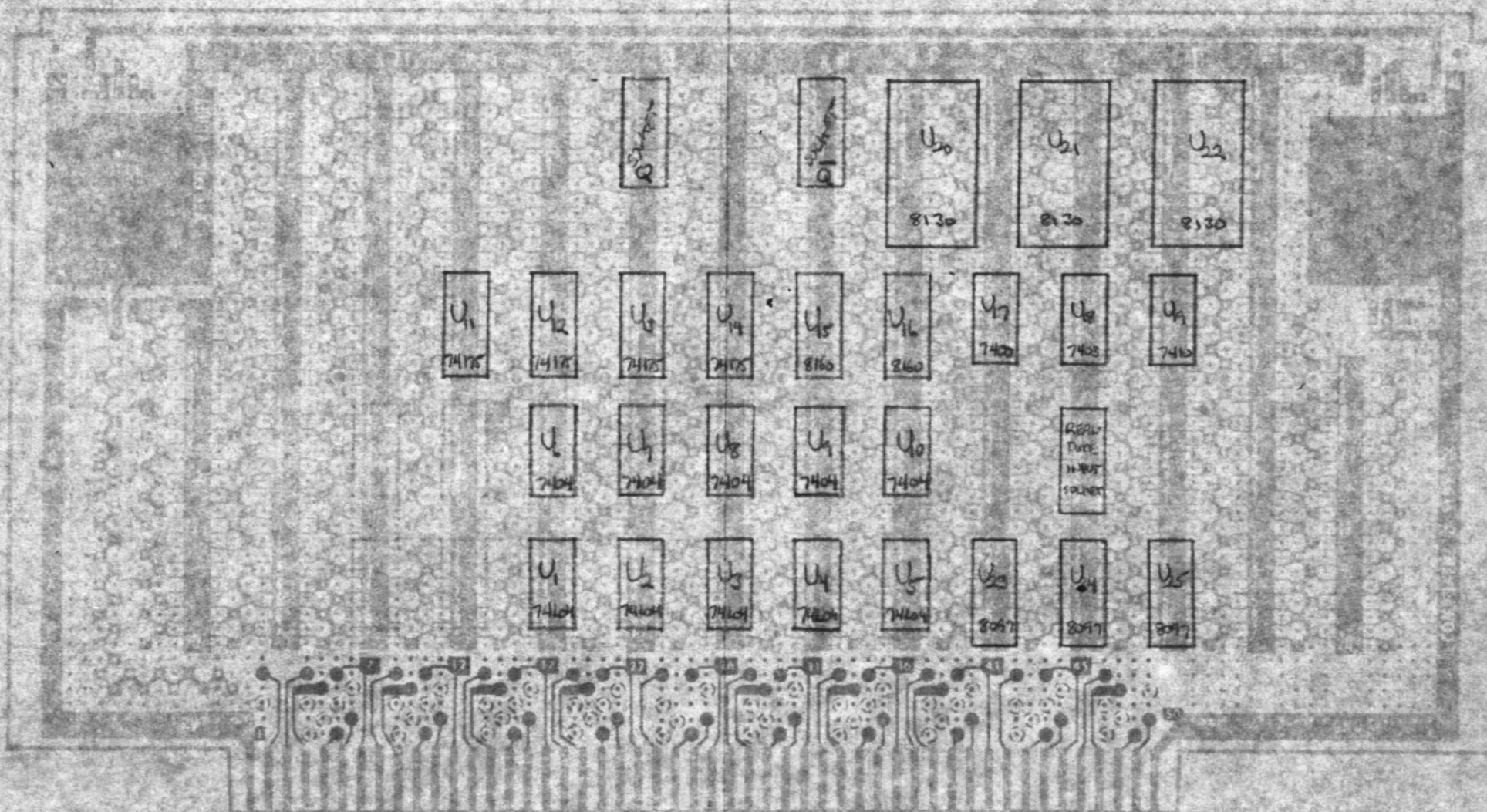
1. RECOMMENDED LOCATION FOR T46-4 TERMINALS IN POWER AND GROUND PLANES AT ROWS 23 & 25, AND RIGHT SIDE REGULATOR POSITION.
2. ZIG-ZAG BUS PADS ON POWER PLANE ARE OFFSET FROM THOSE ON GROUND PLANE.
3. DASHED CIRCLES REPRESENT CONNECTOR CONTACT PADS ON OPPOSITE SIDE OF BOARD.
4. DIPS WITH 0.3" SPAN MOUNT OVER SOLID BUS COLUMNS.
5. ZONE LETTERS A TO D ON LEFT BORDER AND 1 TO 2 ON TOP BORDER ARE DIP ROW & COLUMN DESIGNATORS.

VECTOR D.I.P. PLUGBOARD
PATTERN .042" x 0.1" SPACED HOLES
LA13P2 LAYOUT PAPER

VECTOR ELECTRONIC CO., INC.
12460 GLADSTONE AVE.
SYLMAR, CALIFORNIA 91342



BUS INDICATOR



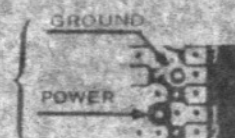
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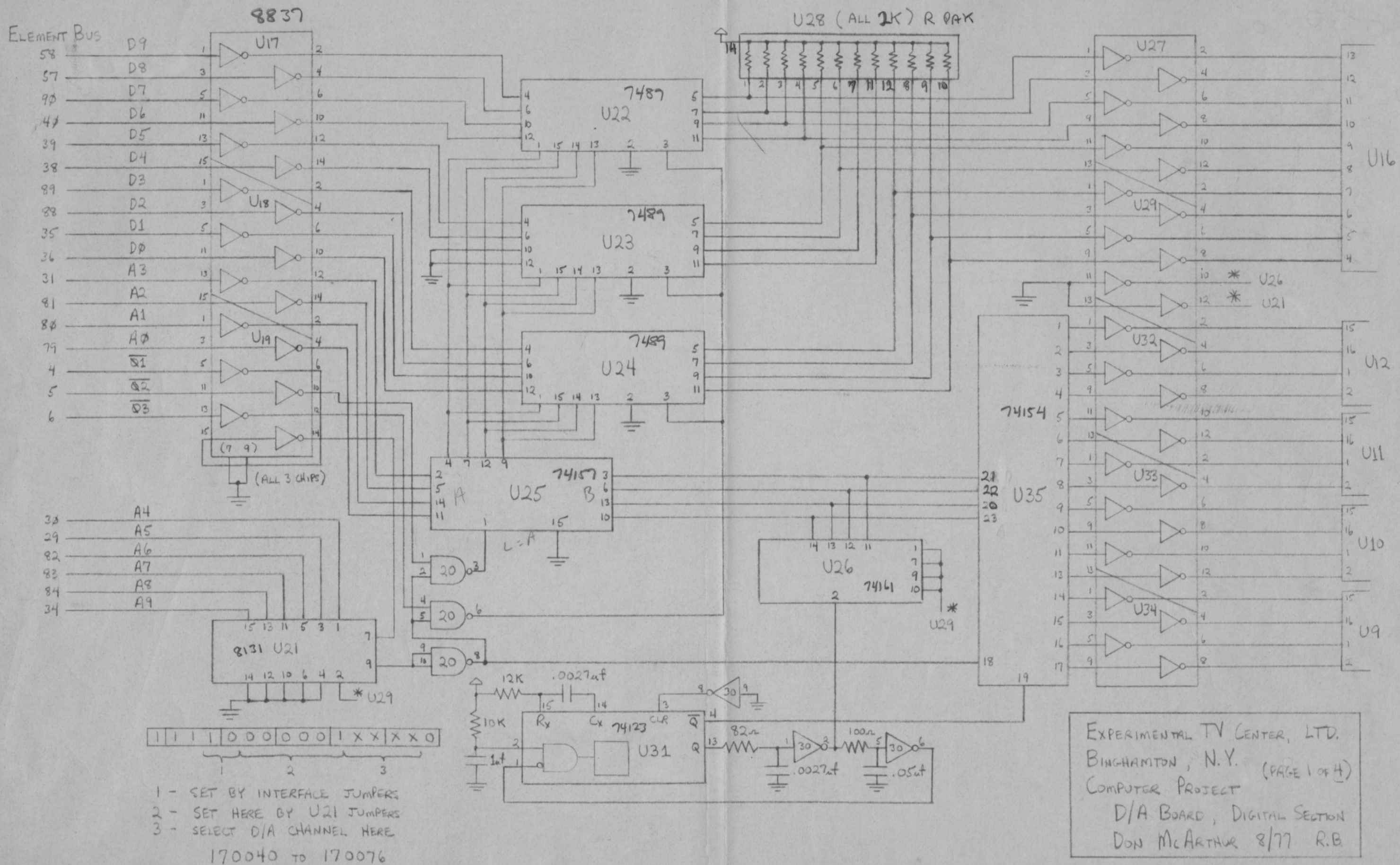
1. RECOMMENDED LOCATION FOR T46-4 TERMINALS IN POWER AND GROUND PLANES AT ROWS 23 & 25, AND LEFT SIDE REGULATOR POSITION.
2. ZIG-ZAG BUS PADS ON POWER PLANE ARE OFFSET FROM THOSE ON GROUND PLANE.
3. DASHED CIRCLES REPRESENT CONNECTOR CONTACT PADS ON OPPOSITE SIDE OF BOARD.
4. DIPS WITH 0.3" SPAN MOUNT OVER SOLID BUS COLUMNS.
5. ZONE LETTERS A TO D ON LEFT BORDER, AND 1 TO 2 ON TOP BORDER ARE DIP ROW & COLUMN DESIGNATORS.

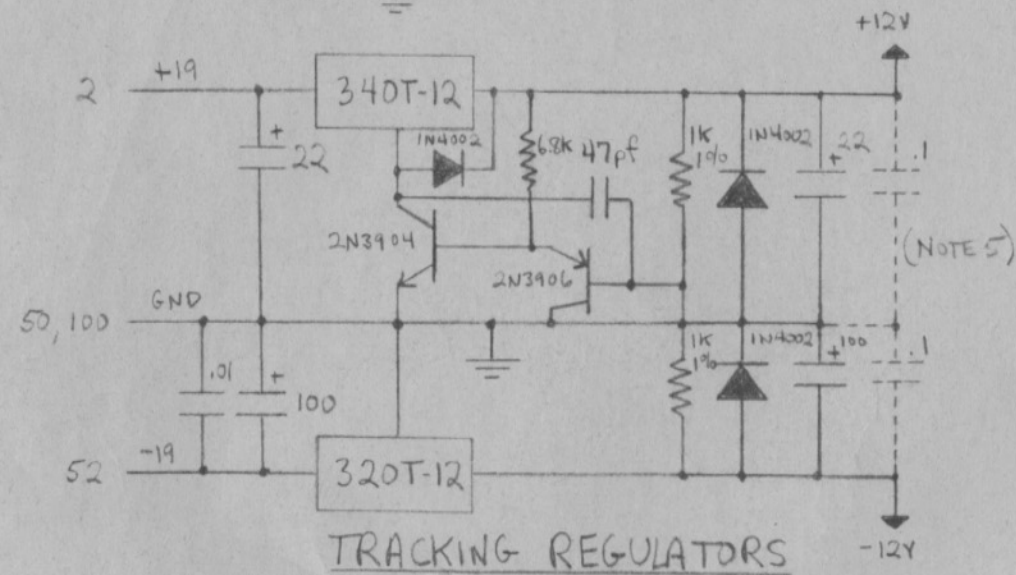
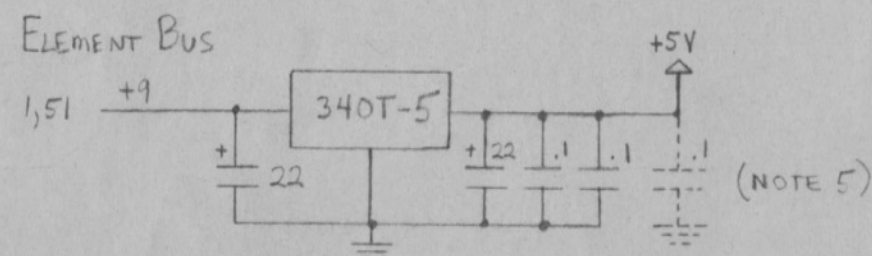
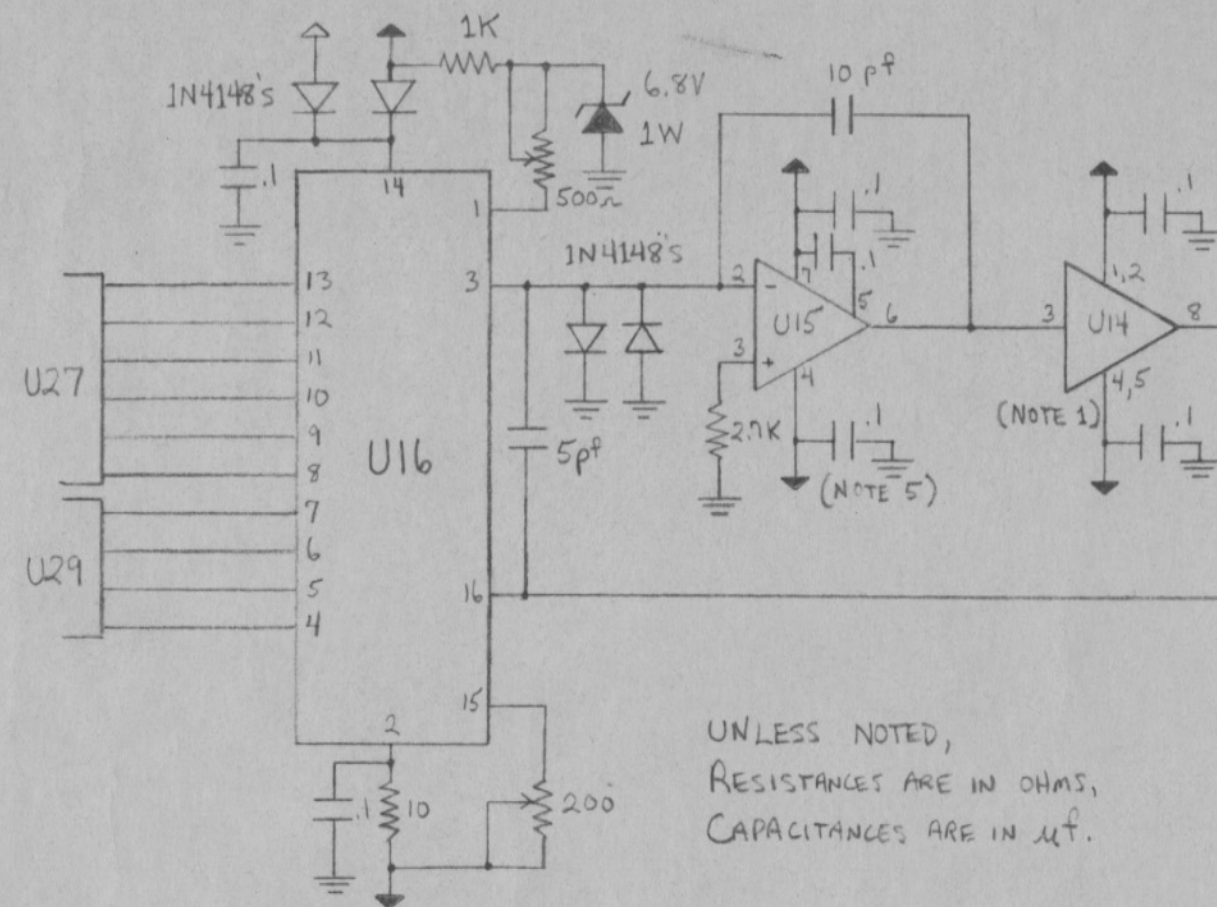
ETC., LTD.
BINGHAMTON, N.Y.
8/77 R.B.
PAGE 3 OF 3

VECTOR D.I.P. PLUGBOARD
PATTERN .042" x 0.1" SPACED HOLES
LA13P1 LAYOUT PAPER

VECTOR ELECTRONIC CO., INC.
12460 GLADSTONE AVE.
SYLMAR, CALIFORNIA 91342

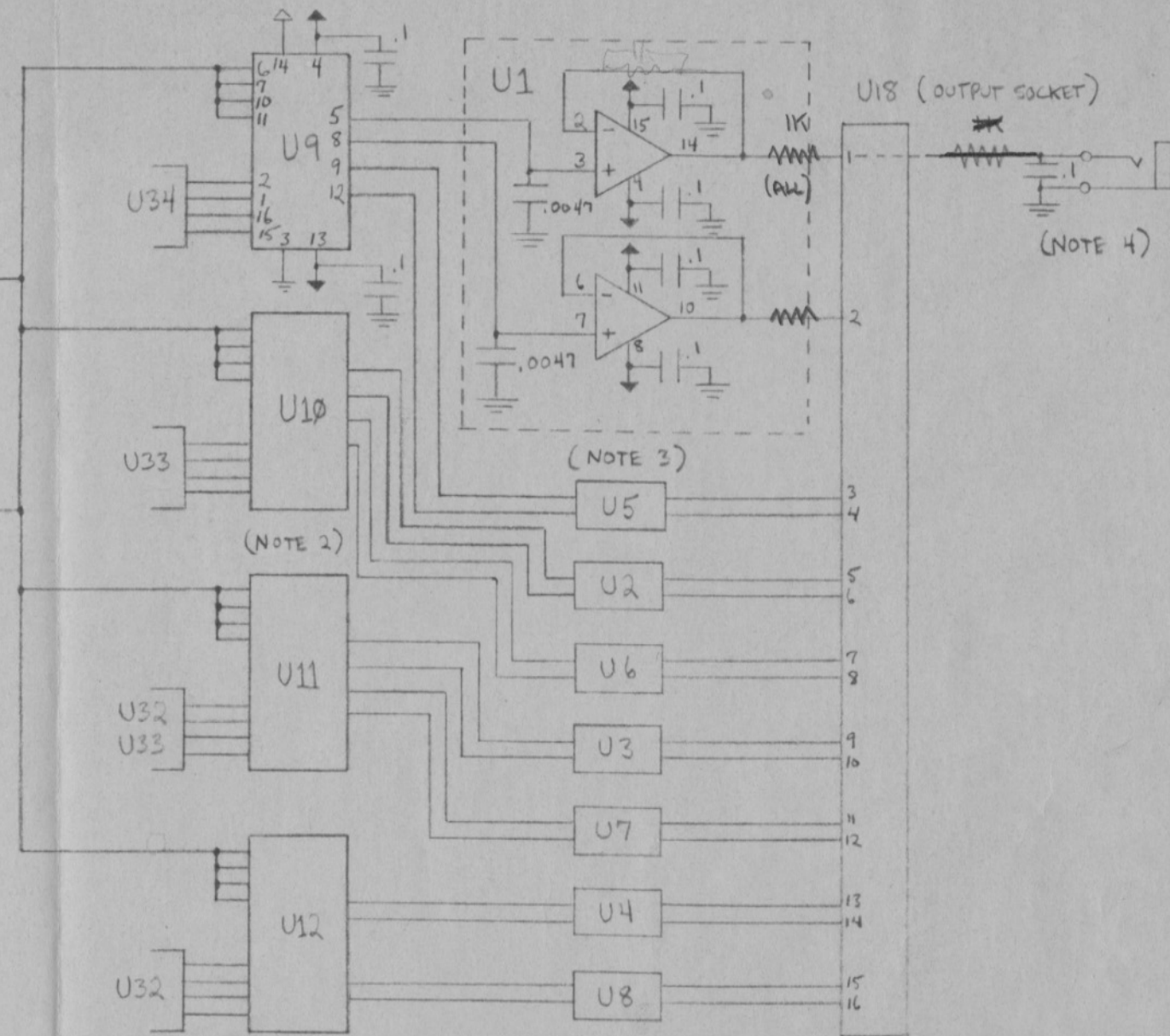






NOTES :

- 1) U14 (LH0002CN) IS A 10-PIN DIP.
- 2) U10-U12 ARE CONFIGURED SIMILARLY TO U9.
- 3) U2-U8 ARE CONFIGURED SIMILARLY TO U1, WHICH CONSISTS OF 2 LM307N CHIPS IN ONE 16-PIN SOCKET.
- 4) SEE DESCRIPTION OF D/A OUTPUT PANEL.
- 5) .1μf TANTALUM CAPACITORS ARE PLACED CLOSE TO POWER SUPPLY PINS OF ALL ANALOG CHIPS.



EXPERIMENTAL TV CENTER, LTD
BINGHAMTON, N.Y.
COMPUTER PROJECT
D/A BOARD (PAGE 2 OF 4)
ANALOG SECTION
DON McARTHUR 8/77 R.B.

PARTS LIST

| | |
|----|---|
| 1 | VECTOR 8800V UNIVERSAL 100-PIN PLUG-BOARD |
| 26 | 16-PIN DIP WIRE WRAP SOCKETS |
| 8 | 14-PIN DIP " " " |
| 1 | 24-PIN DIP |
| 3 | HEAT SINKS |
| 1 | LM340T-5 VOLTAGE REGULATOR CHIP |
| 1 | LM340T-12 " " " |
| 1 | LM320T-12 " " " |
| 1 | 2N3904 TRANSISTOR (NPN) |
| 1 | 2N3906 " (PNP) |
| 1 | 1N4148 DIODES |
| 3 | 1N4002 DIODES |
| 1 | 6.8V 1WATT ZENER DIODE |
| 1 | SN7400N QUAD 2-INPUT NAND |
| 6 | SN7404N HEX INVERTER |
| 3 | SN7489N 64-BIT RAM |
| 1 | SN74123N MONOSTABLE MULTIVIBRATOR |
| 1 | SN74154N 4-LINE TO 16-LINE DEMULTIPLEXER |
| 1 | SN74157N QUAD 2:1 DATA SELECTOR |
| 1 | SN74161N BINARY COUNTER |
| 1 | DM8131N 6-BIT UNIFIED BUS COMPARATOR |
| 3 | DM8837N HEX UNIFIED BUS RECEIVER |
| 1 | DAC100 10-BIT D/A |
| 1 | LM318N HIGH SPEED OP AMP |
| 1 | LH0002CN CURRENT AMP |
| 3 | AH0015CD QUAD ANALOG SWITCH |
| 16 | LM307N OP AMP |

CAPACITORS

| | |
|----|------------------------------|
| 2 | 100 μ F 25V ELECTROLYTIC |
| 4 | 22 μ F 25V " |
| 1 | 1 μ F 50V " |
| 38 | .1 μ F 35V TANTALUM |
| 1 | .05 μ F DISK |
| 1 | .01 μ F MYLAR |
| 16 | .0047 μ F " |
| 2 | .0027 μ F DISK |
| 1 | 47 pF " |
| 1 | 10 pF " |
| 1 | 5 pF " |

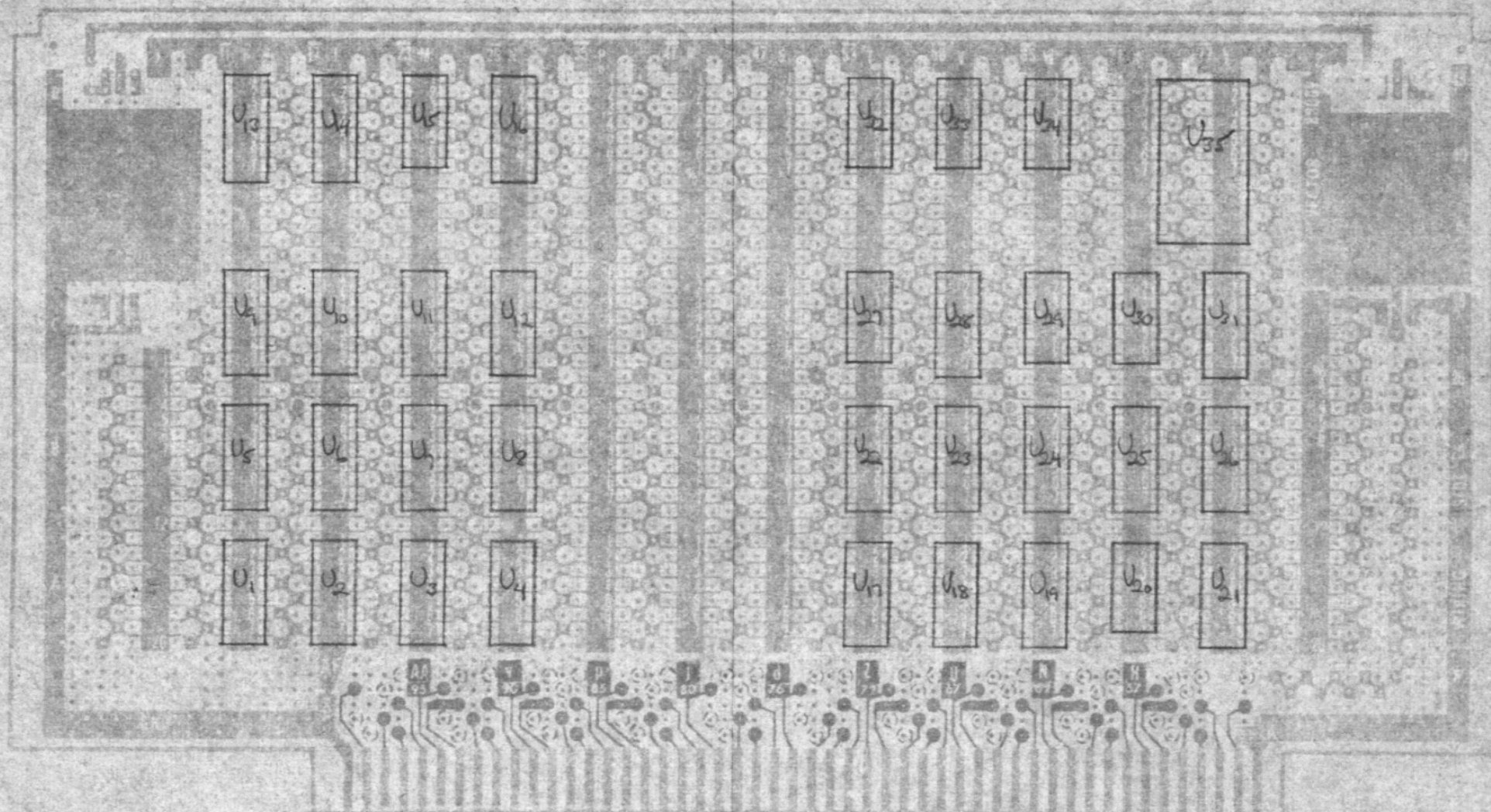
RESISTORS

| | |
|---|----------------------|
| 2 | 1K 1/2 WATT 1% |
| 1 | 12K 1/4 WATT 5% |
| 1 | 10K " |
| 1 | 6.8K " |
| 1 | 2.7K " |
| 1 | 1K " |
| 1 | 100 Ω " |
| 1 | 82 Ω " |
| 1 | 10 Ω " |
| 1 | 500 Ω TRIMPOT |
| 1 | 200 Ω " |

| NUMBER | CHIP | LOCATION | +12 PIN | -12 PIN | +5 PIN | GND PIN |
|--------|------------|----------|---------|---------|--------|---------|
| U1 | 2-307 | AK | 11,15 | 4,8 | | |
| U2 | 2-307 | AL | 11,15 | 4,8 | | |
| U3 | 2-307 | AM | 11,15 | 4,8 | | |
| U4 | 2-307 | AN | 11,15 | 4,8 | | |
| U5 | 2-307 | BK | 11,15 | 4,8 | | |
| U6 | 2-307 | BL | 11,15 | 4,8 | | |
| U7 | 2-307 | BM | 11,15 | 4,8 | | |
| U8 | 2-307 | BN | 11,15 | 4,8 | | |
| U9 | AH0015 | CK | 4 | 13 | 14 | 3 |
| U10 | AH0015 | CL | 4 | 13 | 14 | 3 |
| U11 | AH0015 | CM | 4 | 13 | 14 | 3 |
| U12 | AH0015 | CN | 4 | 13 | 14 | 3 |
| U13 | OUT SOCKET | DK | | | | |
| U14 | LH0002 | DL | 1,2 | 4,5 | | |
| U15 | LM318 | DM | 7 | 4 | | |
| U16 | DAC100 | DN | 14 | 2 | | |
| U17 | 8837 | AT | | | 16 | 8 |
| U18 | 8837 | AY | | | 16 | 8 |
| U19 | 8837 | AW | | | 16 | 8 |
| U20 | 7400 | AX | | | 14 | 7 |
| U21 | 8131 | AY | | | 16 | 8 |
| U22 | 7489 | BT | | | 16 | 8 |
| U23 | 7489 | BV | | | 16 | 8 |
| U24 | 7489 | BW | | | 16 | 8 |
| U25 | 74157 | BX | | | 16 | 8 |
| U26 | 74161 | BY | | | 16 | 8 |
| U27 | 7404 | CT | | | 14 | 7 |
| U28 | PULL-UPS | CV | | | 16 | |
| U29 | 7404 | CW | | | 14 | 7 |
| U30 | 7404 | CX | | | 14 | 7 |
| U31 | 74123 | CY | | | 16 | 8 |
| U32 | 7404 | DT | | | 14 | 7 |
| U33 | 7404 | DV | | | 14 | 7 |
| U34 | 7404 | DW | | | 14 | 7 |
| U35 | 74154 | DX | | | 24 | 12 |

EXPERIMENTAL TV CENTER, LTD., BINGHAMTON, N.Y.
 COMPUTER PROJECT : D/A BOARD (PAGE 3 OF 4)
 DON MCARTHUR 8/77 R.B.

D/A



NOTES:

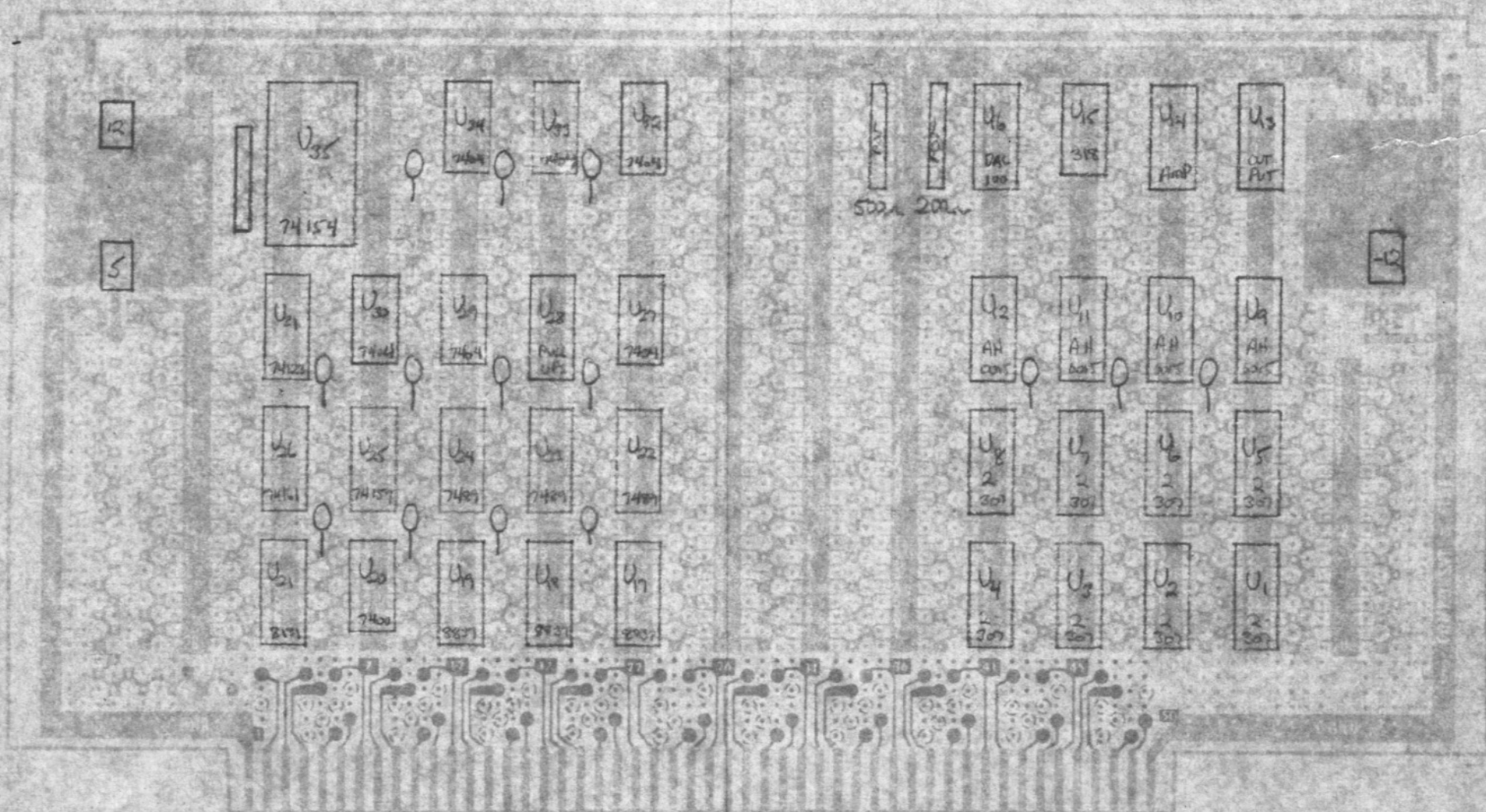
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LA13P2 LAYOUT PAPER

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SYLMAR, CALIFORNIA 91342

D/A



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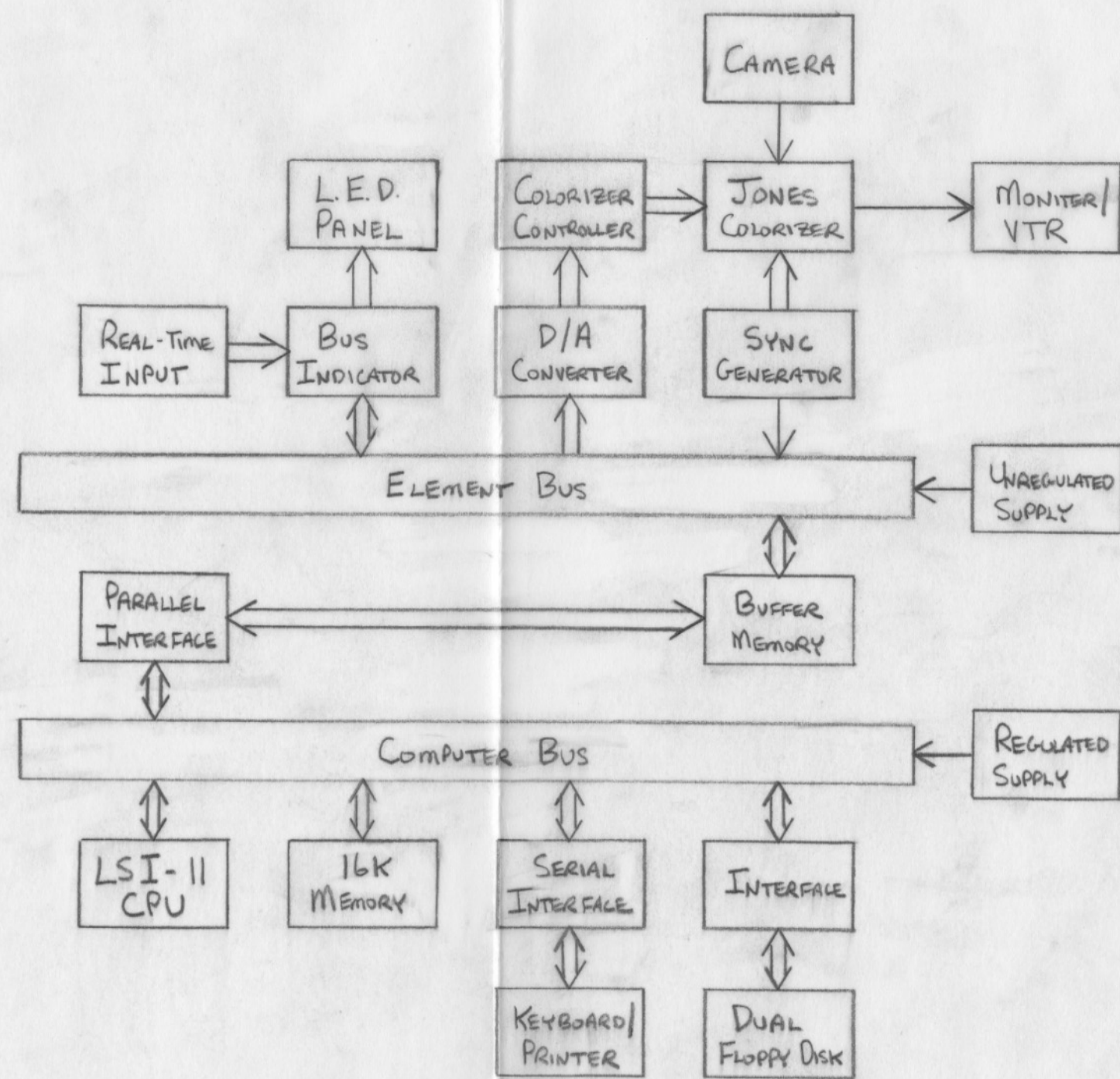


ETC., LTD.
BINGHAMTON, N.Y.
8/77 R.B.
PAGE 4 OF 4

VECTOR D.I.P. PLUGBOARD
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LA13P1 LAYOUT PAPER

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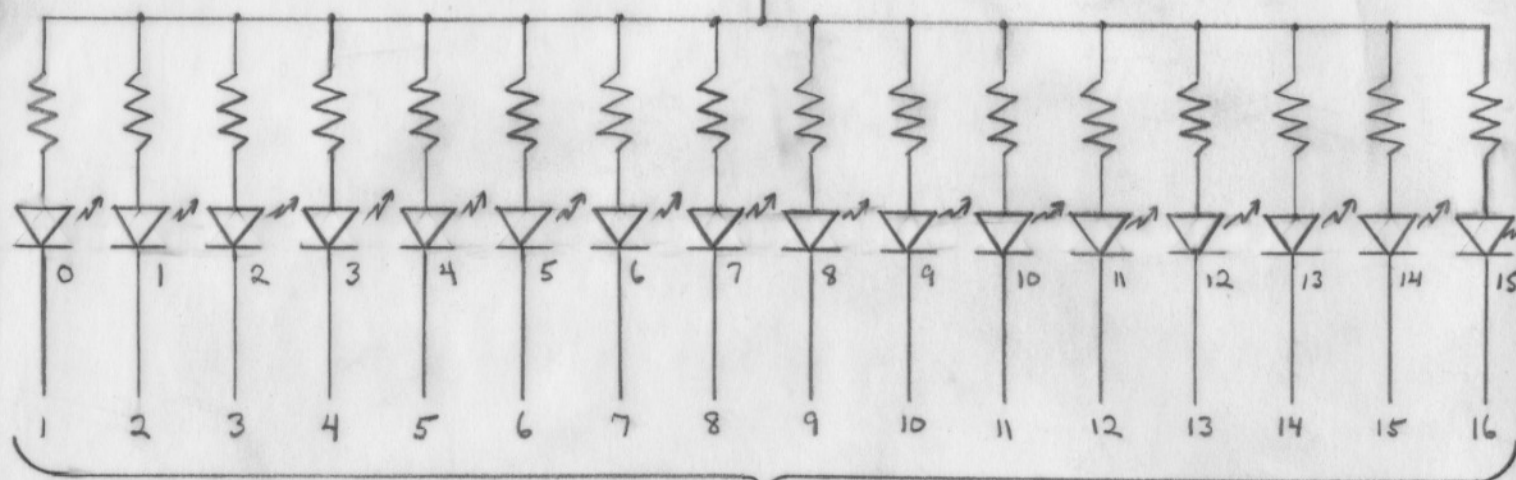
EXPERIMENTAL TV CENTER, LTD.
 BINGHAMTON, N.Y.
 COMPUTER - BASED
 PROCESSING VIDEO SYNTHESIZER
 SYSTEM DIAGRAM, 9/77 R.B.



BUS INDICATOR LED PANEL

ALL RESISTORS 910 OHMS

+5V (FROM COMPUTER BUS SUPPLY)

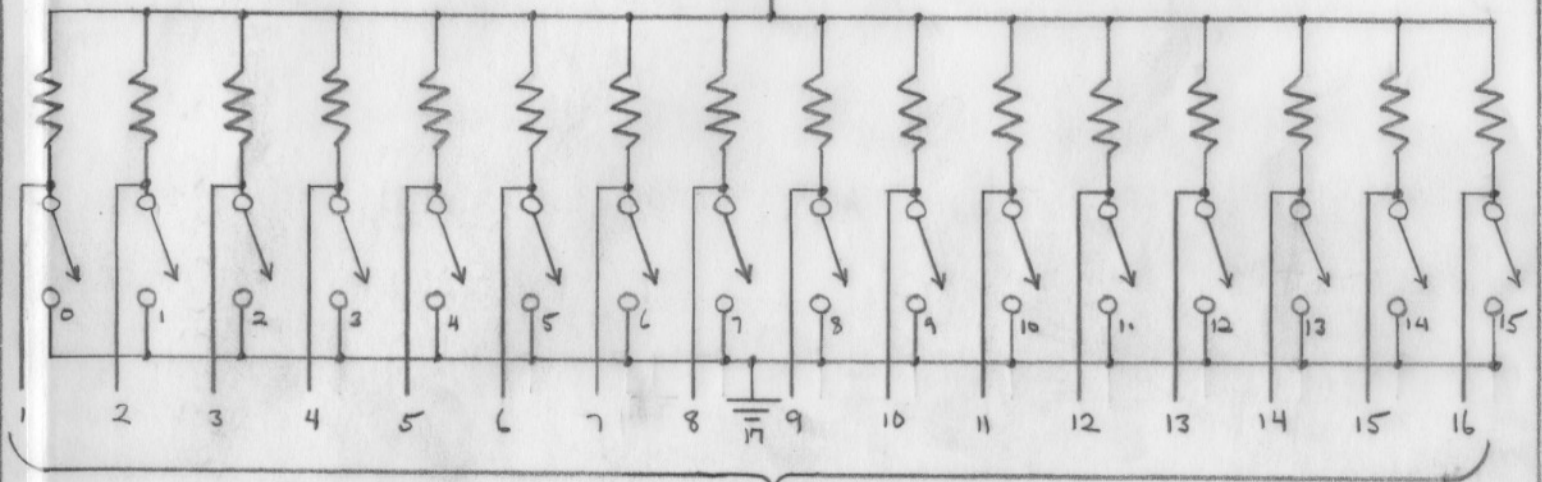


DIP PLUG

REAL TIME INPUT BOX

ALL RESISTORS 1K OHMS

+5V (PIN 18, "D" CONNECTOR)



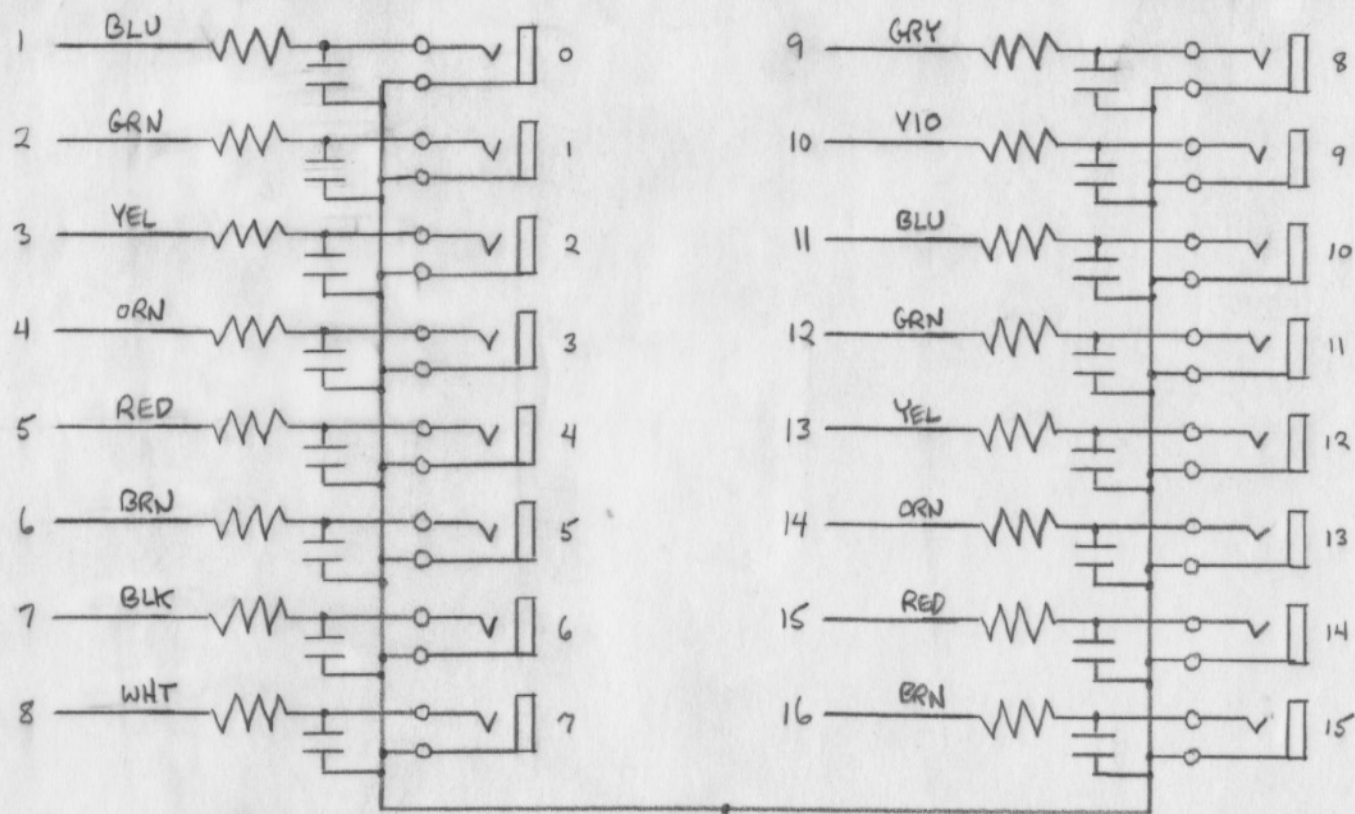
AMPHENOL "D" CONNECTOR

D/A OUTPUT PANEL

(MINIATURE PHONE JACKS)

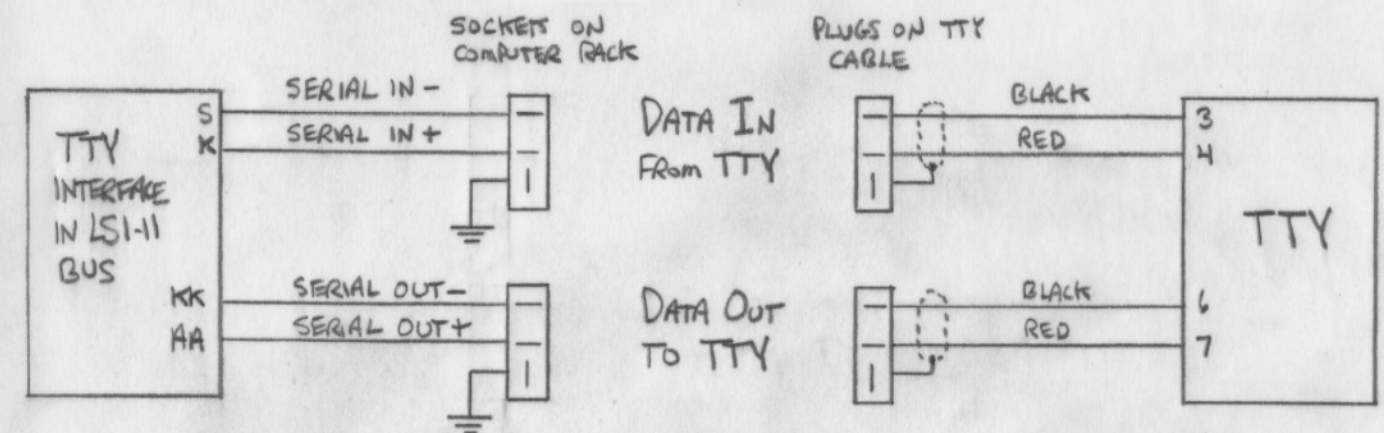
16-PIN DIP PLUG, ALL RESISTORS 1K OHMS

16 PIN DIP PLUG, ALL CAPACITORS .01 uF



GROUNDING DIRECTLY TO D/A BOARD

TTY CONNECTIONS (OBSOLETE 7/78)



EXPERIMENTAL TV CENTER, LTD.

BINGHAMTON, N.Y.

COMPUTER PROJECT

MISC. RACK WIRING

9/77 R.B.

ELEMENT BUS

DON SIGNALS

| | | | |
|----|-----------------|-----|---------|
| 1 | +9V | 51 | +9V |
| 2 | +19V | 52 | -19V |
| 3 | XRDY | 53 | SSW DSB |
| 4 | $\overline{Q1}$ | 54 | EXT CLR |
| 5 | $\overline{Q2}$ | 55 | |
| 6 | $\overline{Q3}$ | 56 | BYTE |
| 7 | ETF | 57 | DI08 |
| 8 | CEM | 58 | DI09 |
| 9 | CME | 59 | DI010 |
| 10 | FTE | 60 | DI011 |
| 11 | TR (VDTTL) | 61 | DI012 |
| 12 | X CLOCK | 62 | DI013 |
| 13 | X LOAD | 63 | DI014 |
| 14 | Y CLOCK | 64 | DI015 |
| 15 | Y LOAD | 65 | |
| 16 | HDTTL | 66 | SCTTL |
| 17 | | 67 | |
| 18 | STA DSB | 68 | MWRT |
| 19 | C/C DSB | 69 | PS |
| 20 | UNPROT | 70 | PROT |
| 21 | SS | 71 | RUN |
| 22 | ADD DSB | 72 | PRDY |
| 23 | DO DSB | 73 | PINT |
| 24 | Q2 | 74 | PHOLD |
| 25 | Q1 | 75 | PRESET |
| 26 | PHLDA | 76 | PSYNC |
| 27 | PWAIT | 77 | WE |
| 28 | PINTE | 78 | RE |
| 29 | A5 | 79 | A0 |
| 30 | A4 | 80 | A1 |
| 31 | A3 | 81 | A2 |
| 32 | A15 | 82 | A6 |
| 33 | A12 | 83 | A7 |
| 34 | A9 | 84 | A8 |
| 35 | D1 | 85 | A13 |
| 36 | D0 | 86 | A14 |
| 37 | A10 | 87 | A11 |
| 38 | D4 | 88 | D2 |
| 39 | D5 | 89 | D3 |
| 40 | D6 | 90 | D7 |
| 41 | DI2 | 91 | DI4 |
| 42 | DI3 | 92 | DI5 |
| 43 | DI7 | 93 | DI6 |
| 44 | SM1 | 94 | DI1 |
| 45 | SOUT | 95 | DI0 |
| 46 | SINP | 96 | SINTA |
| 47 | SMEMR | 97 | SNO |
| 48 | SHLTA | 98 | SSTACK |
| 49 | CLOCK | 99 | POC |
| 50 | GND | 100 | GND |

| | | |
|-----------------|---|--------------------|
| $\overline{Q1}$ | } | From BUFFER MEMORY |
| $\overline{Q2}$ | | |
| $\overline{Q3}$ | | |
| CEM | | |
| CME | } | From BUS INDICATOR |
| ETF | | |
| FTE | | |
| TR | | - From CLOCK |

A0 - A9
D0 - D7
DI08 - DI015

JEFF SIGNALS

X CLOCK
X LOAD
Y CLOCK
Y LOAD
HDTTL
SCTTL
WE (PWR)
RE (INVERSE PDBIN)
BYTE

NOTES

- ① ~~PIN 17 CARRIES NEGATIVE GOING V.D., TR IS THE SAME AS VDTTL.~~
- ② D0 - D7 ARE DATA OUT FOR ALTAIR, AND DATA IN-OUT FOR DON'S SYSTEM.
- ③ SIGNALS OTHER THAN DON'S OR JEFF'S ARE TAKEN FROM THE ALTAIR 8800 BUS STRUCTURE.
- ④ PINS 4-11 ARE DESIGNATED "VECTORED INTERRUPT LINES" IN THE ALTAIR BUS.
- ⑤ $\overline{Q1}$ AND $\overline{Q2}$ ARE DON SIGNALS THAT ARE UNRELATED TO $\overline{Q1}$ AND $\overline{Q2}$ ALTAIR SIGNALS.

EXPERIMENTAL TV CENTER, LTD.
BINGHAMTON, N.Y.
COMPUTER PROJECT 9/77
ELEMENT BUS R.B.

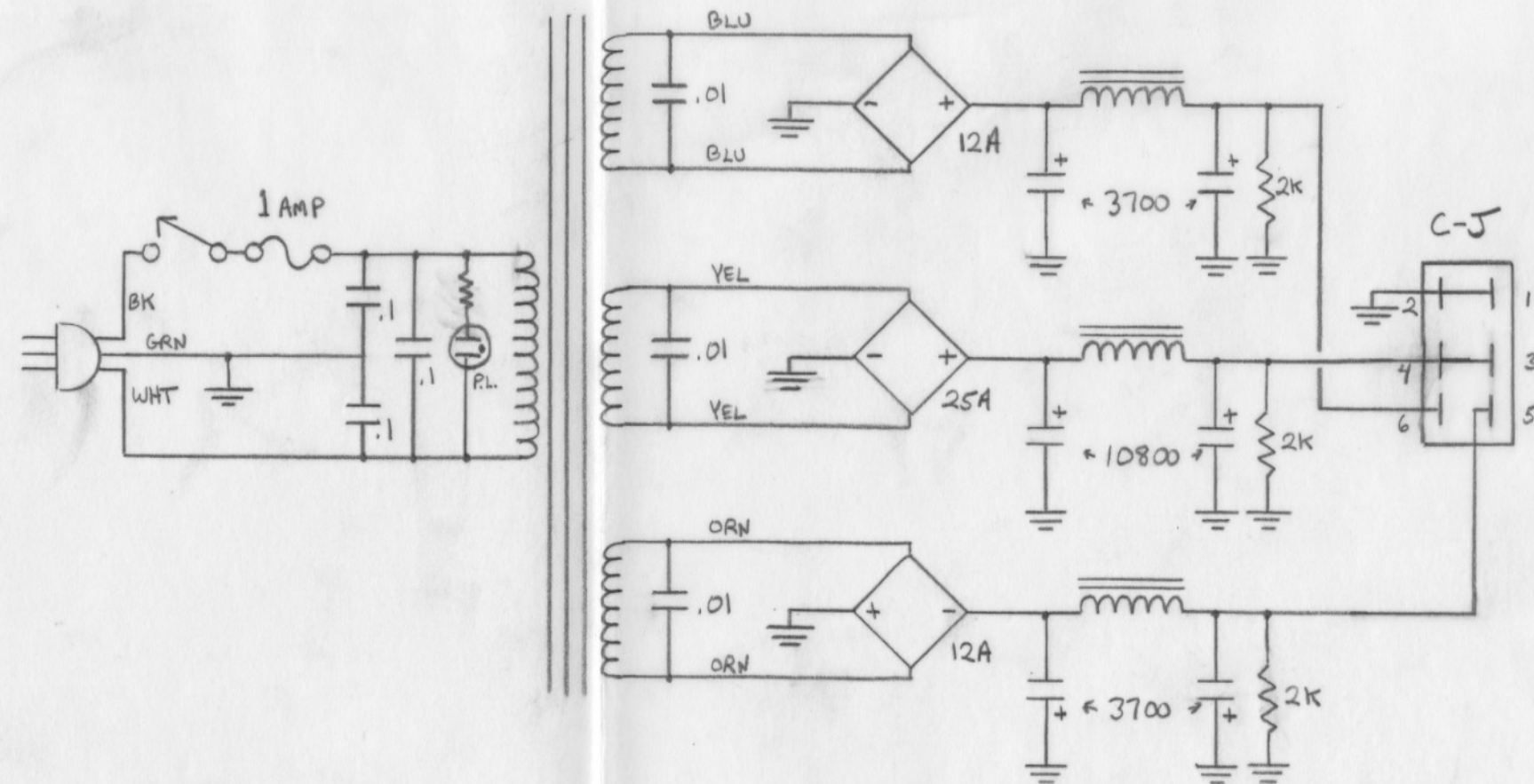
EXPERIMENTAL TV CENTER, LTD.
 BINGHAMTON, N.Y. 13701
 COMPUTER PROJECT
 ELEMENT BUSS POWER SUPPLY
 6/77 RICH BREWSTER
 PAGE 1 OF 1

PARTS LIST :

- TRANSFORMER - BASLER BE12696-001
 2 BRIDGE RECTIFIERS 200 PIV 12 AMP
 1 BRIDGE RECTIFIER 400 PIV 25 AMP
 3 CHOKES, 20 AMP, $\leq .05$ OHM
 4 CAPACITORS, 3700 MFD AT 75V
 2 CAPACITORS, 10800 MFD AT 20V
 3 RESISTORS, 2000 OHM $\frac{1}{2}$ WATT
 1 FUSE HOLDER w/ 1 AMP SLO-BLO FUSE
 3 CAPACITORS, .01 MFD 100V MYLAR
 3 CAPACITORS, .1 MFD 600V
 1 NEON PILOT LAMP ASSEMBLY
 1 S.P.S.T. TOGGLE SWITCH, 6 AMP 120V
 1 LINE CORD, 3 WIRE, 120V
 1 CINCH-JONES CONNECTOR, 6 PIN, CHASSIS MOUNTED FEMALE
 1 ALUMINUM CHASSIS 3" x 7" x 15"

CABLE PARTS :

- 1 C-J MALE, CABLE MOUNT, 6 PIN
 1 C-J FEMALE, CABLE MOUNT, 6 PIN
 10' 7-CONDUCTOR, 18 GAUGE CABLE



| CONNECTOR | CABLE | VOLTAGE | CURRENT |
|-----------|---------------|---------|---------|
| 1, 2 | BLK, GRN, BRN | GND | |
| 3, 4 | WHT, RED | +9V | 6A |
| 5 | BLU* | -19V | 2A |
| 6 | ORN* | +19V | 2A |

* NOTE - THESE ARE THE CABLE COLORS, NOT THE TRANSFORMER LEADS WHICH HAPPEN TO BE THE OPPOSITE COLORS.

EXPERIMENTAL TV CENTER, LTD.
 BINGHAMTON, N.Y.
 COMPUTER PROJECT 9/77 R.B.
 BUFFER MEMORY, PAGE 2 OF 3

PARTS LIST:

1 VECTOR 8800V UNIVERSAL 100-PIN PLUGBOARD
 38 16-PIN DIP WIRE WRAP SOCKETS
 10 14-PIN " " " "
 1 24-PIN " " " "
 4 HEAT SINKS
 1 BERG H-854 40-PIN CONNECTOR
 2 LM340T-5 REGULATOR
 4 SN7400N QUAD 2-INPUT NAND
 2 SN7402N QUAD 2-INPUT NOR
 1 SN7404N HEX INVERTER
 1 SN74S04N SCHOTTKY HEX INVERTER
 1 SN7430N 8-INPUT NAND
 1 SN7474N DUAL D FLIP FLOP
 1 SN74154N 4-LINE TO 16-LINE DECODER
 3 SN74157N QUAD 2:1 DATA SELECTOR
 4 SN74161N ASYNCHRONOUS 4-BIT COUNTER
 8 DM8097N TRI-STATE HEX BUFFER
 6 N8T97N HIGH-SPEED TRI-STATE HEX BUFFER
 1 DM8160N 6-BIT COMPARATOR
 16 21L02 LOW POWER 1024x1 STATIC RAM
 2 22µf 25V ELECTROLYTIC CAPACITORS
 2 10µf 50V " "
 12 .1µf 35V TANTALUM " "
 1 .01µf 100V MYLAR " "
 1 .002µf " DISK " "
 1 .001µf " " " "
 1 330pf " SILVER MICA " "
 2 51Ω 1/4 WATT RESISTORS
 3 100Ω " " "
 3 1K " " "
 3 10K " " "

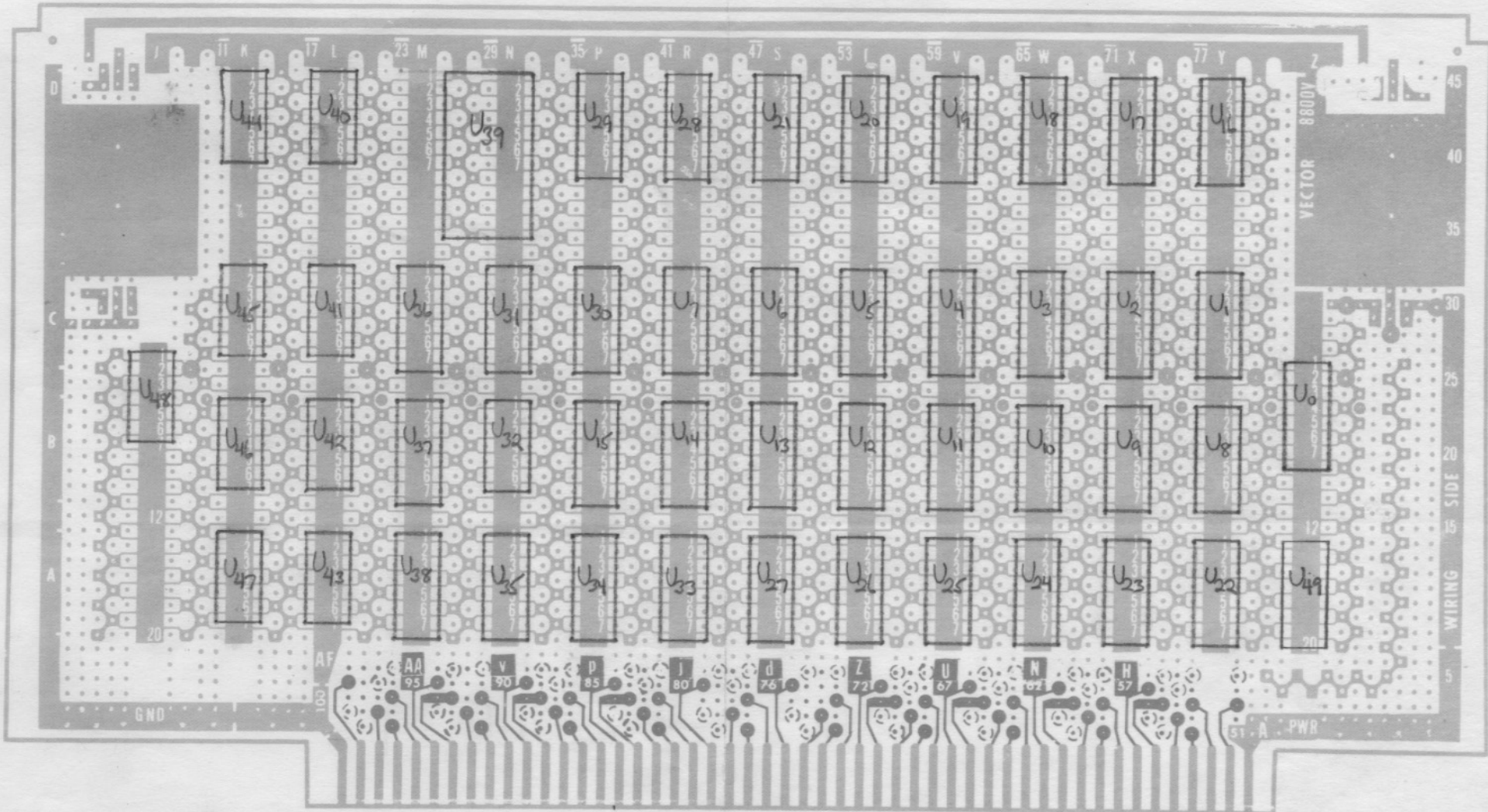
POWER CONSUMPTION:

+9VDC @

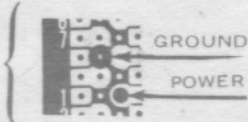
| NUMBER | CHIP | LOCATION | VCC PIN | GND PIN |
|-----------------|-------|----------|---------|---------|
| U ₀ | 21L02 | BCZ | 10 | 9 |
| U ₁ | 21L02 | CY | 10 | 9 |
| U ₂ | 21L02 | CX | 10 | 9 |
| U ₃ | 21L02 | CW | 10 | 9 |
| U ₄ | 21L02 | CV | 10 | 9 |
| U ₅ | 21L02 | CT | 10 | 9 |
| U ₆ | 21L02 | CS | 10 | 9 |
| U ₇ | 21L02 | CR | 10 | 9 |
| U ₈ | 21L02 | BY | 10 | 9 |
| U ₉ | 21L02 | BX | 10 | 9 |
| U ₁₀ | 21L02 | BW | 10 | 9 |
| U ₁₁ | 21L02 | BV | 10 | 9 |
| U ₁₂ | 21L02 | BT | 10 | 9 |
| U ₁₃ | 21L02 | BS | 10 | 9 |
| U ₁₄ | 21L02 | BR | 10 | 9 |
| U ₁₅ | 21L02 | BP | 10 | 9 |
| U ₁₆ | 8097 | DY | 16 | 8 |
| U ₁₇ | 8097 | DX | 16 | 8 |
| U ₁₈ | 8097 | DW | 16 | 8 |
| U ₁₉ | 8T97 | DV | 16 | 8 |
| U ₂₀ | 8T97 | DT | 16 | 8 |
| U ₂₁ | 8T97 | DS | 16 | 8 |
| U ₂₂ | 8097 | AY | 16 | 8 |
| U ₂₃ | 8097 | AX | 16 | 8 |
| U ₂₄ | 8097 | AW | 16 | 8 |
| U ₂₅ | 8T97 | AV | 16 | 8 |
| U ₂₆ | 8T97 | AT | 16 | 8 |
| U ₂₇ | 8T97 | AS | 16 | 8 |
| U ₂₈ | 74157 | DR | 16 | 8 |
| U ₂₉ | 74157 | DP | 16 | 8 |
| U ₃₀ | 74157 | CP | 16 | 8 |
| U ₃₁ | 8160 | CN | 16 | 8 |
| U ₃₂ | 7430 | BN | 14 | 7 |
| U ₃₃ | 8097 | AR | 16 | 8 |
| U ₃₄ | 8097 | AP | 16 | 8 |
| U ₃₅ | 74161 | AN | 16 | 8 |
| U ₃₆ | 74161 | CM | 16 | 8 |
| U ₃₇ | 74161 | Bm | 16 | 8 |
| U ₃₈ | 74161 | AM | 16 | 8 |
| U ₃₉ | 74154 | DNM | 24 | 12 |
| U ₄₀ | 7400 | DL | 14 | 7 |
| U ₄₁ | 7400 | CL | 14 | 7 |
| U ₄₂ | 7400 | BL | 14 | 7 |
| U ₄₃ | 7400 | AL | 14 | 7 |
| U ₄₄ | 7404 | DK | 14 | 7 |
| U ₄₅ | 7402 | CK | 14 | 7 |
| U ₄₆ | 7402 | BK | 14 | 7 |
| U ₄₇ | 74S04 | AK | 14 | 7 |
| U ₄₈ | 7474 | BCT | 14 | 7 |

| BERG H-854 WIRING VIEW | | | |
|---------------------------|-----|--------|-----------------|
| SIGNAL | PIN | SIGNAL | PIN |
| GND | B | A | GND |
| D ₁₅ | D | C | D ₁₄ |
| D ₁₃ | F | E | D ₁₂ |
| D ₁₁ | J | H | D ₁₀ |
| D ₉ | L | K | D ₈ |
| D ₇ | N | M | D ₆ |
| D ₅ | R | P | D ₄ |
| D ₃ | T | S | D ₂ |
| D ₁ | V | U | D ₀ |
| GND | X | W | GND |
| A ₁₀ | Z | Y | A ₉ |
| A ₈ | BB | AA | A ₇ |
| A ₆ | DD | CC | A ₅ |
| A ₄ | FF | EE | A ₃ |
| A ₂ | JJ | HH | A ₁ |
| R | LL | KK | S |
| T | NN | MM | READY |
| SXB | RR | PP | INIT |
| SPARE | TT | SS | SPARE |
| GND | VV | UU | GND |

BUFFER MEMORY



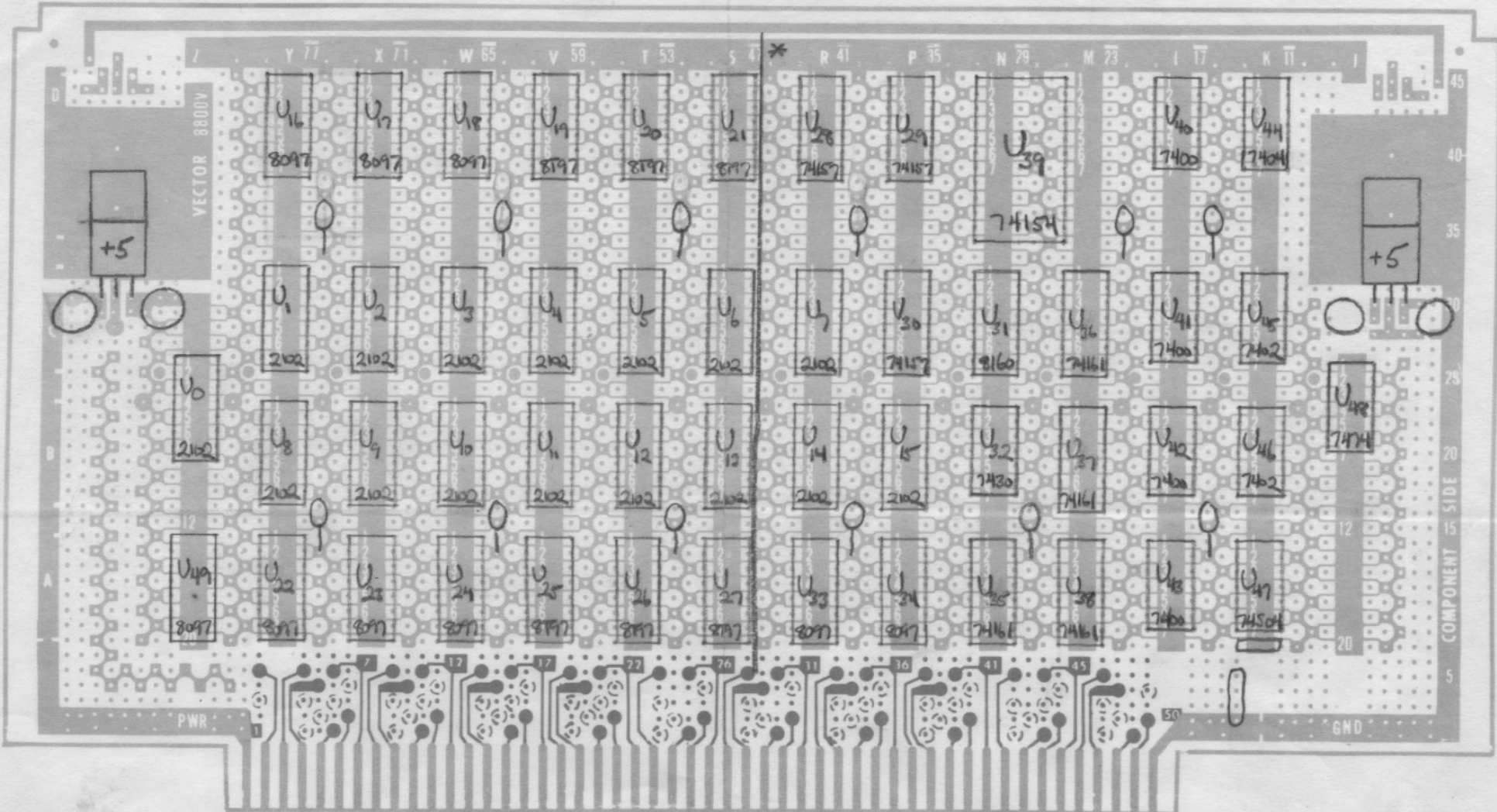
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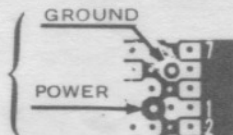
VECTOR D.I.P. PLUGBORD
PATTERN .042" x 0.1" SPACED HOLES
LA13P2 LAYOUT PAPER

VECTOR ELECTRONIC CO., INC.
12460 GLADSTONE AVE.
SYLMAR, CALIFORNIA 91342

BUFFER MEMORY



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 3. DASHED CIRCLES REPRESENT CONNECTOR CONTACT PADS ON OPPOSITE SIDE OF BOARD
 4. ZIG-ZAG BUS PADS ON POWER PLANE ARE OFFSET FROM THOSE ON GROUND PLANE
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- * POWER PLANE CUT TO SEPARATE OUTPUTS FROM TWO +5V REGULATORS

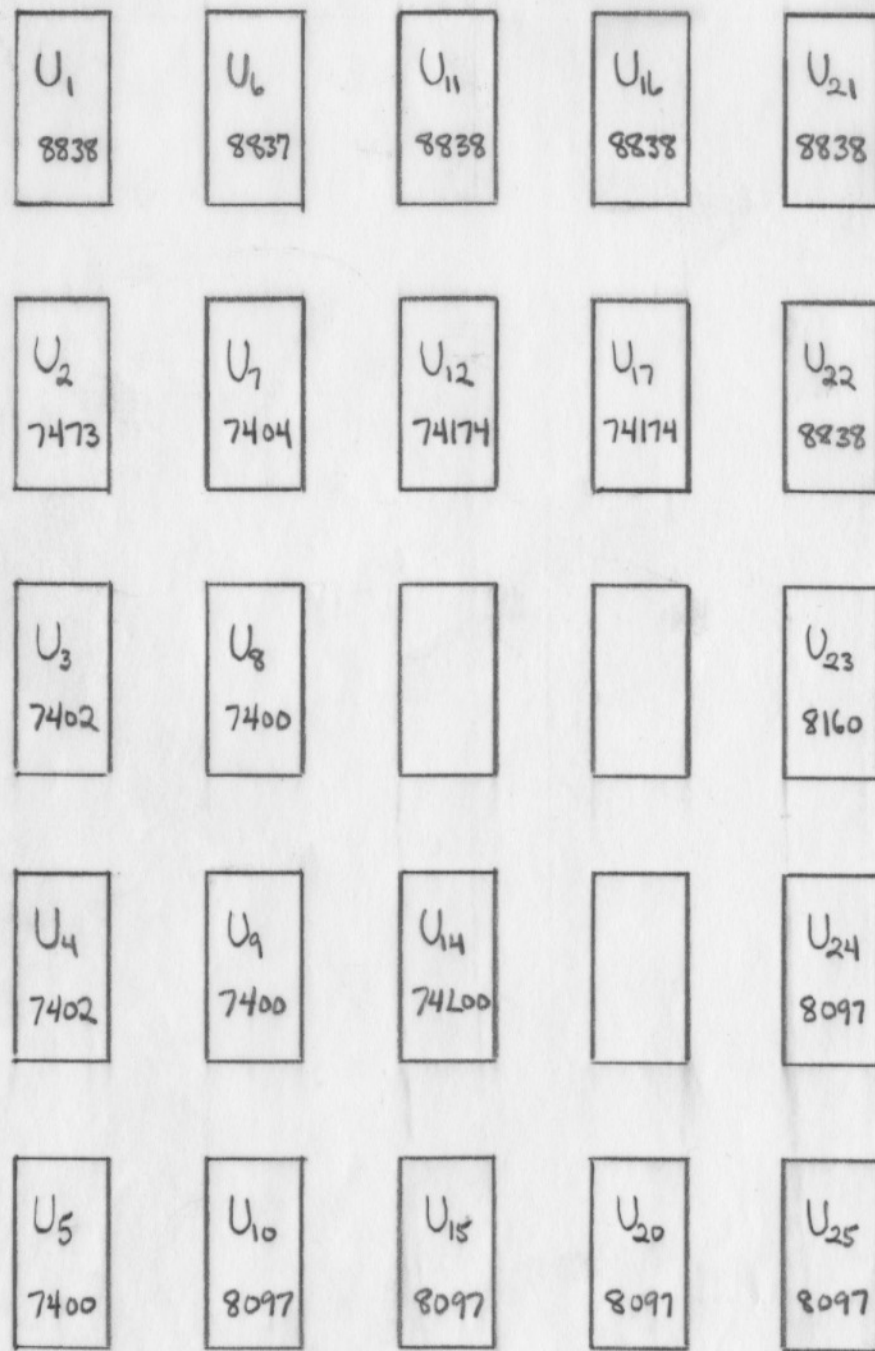


E.T.C., LTD.
BINGHAMTON, N.Y.
9/77 R.B.
PAGE 3 OF 3

VECTOR D.I.P. PLUGBORD
PATTERN .042" x 0.1" SPACED HOLES
LA13P1 LAYOUT PAPER

VECTOR ELECTRONIC CO., INC.
12460 GLADSTONE AVE.
SYLMAR, CALIFORNIA 91342

COMPONENT SIDE



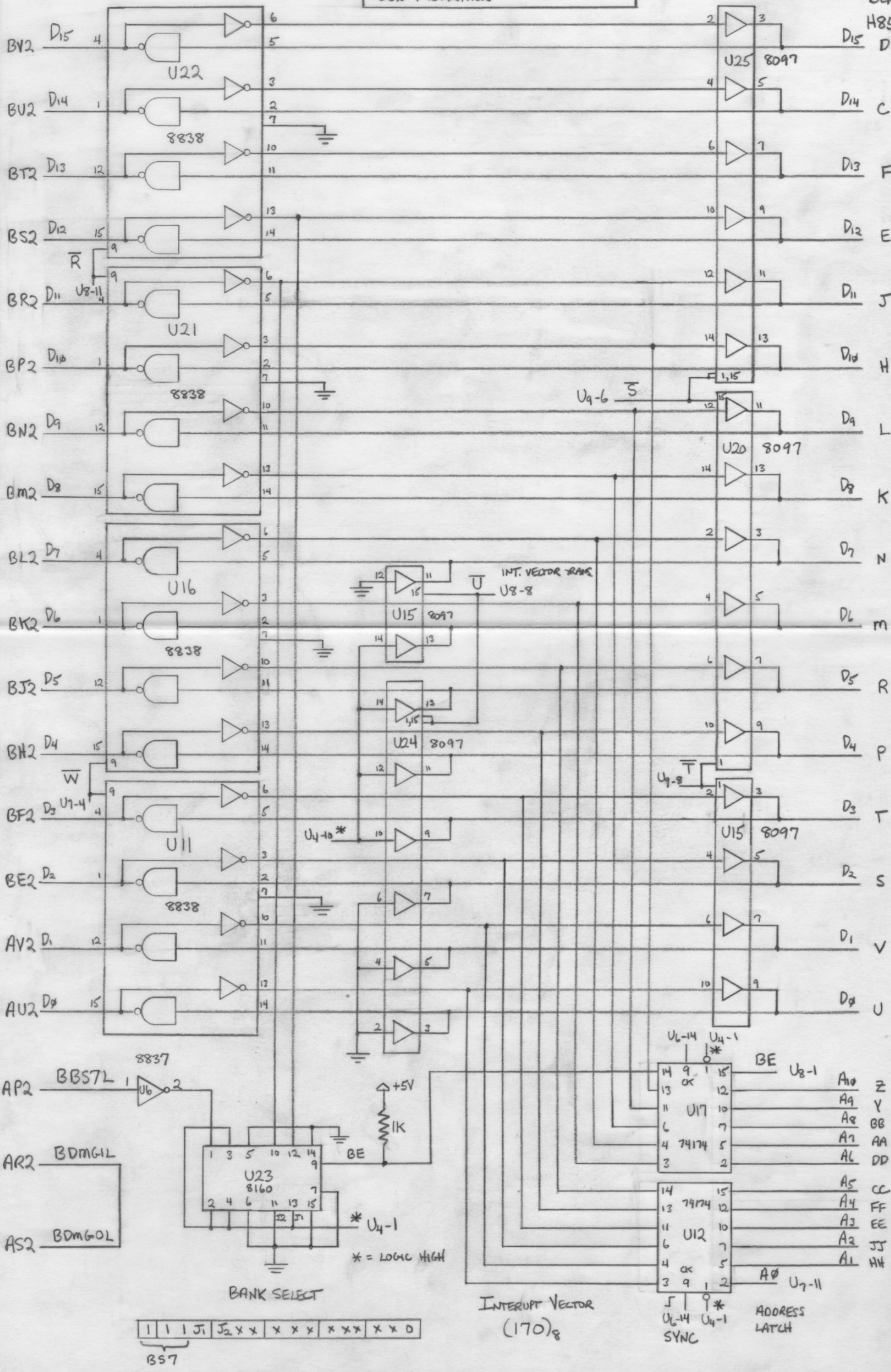
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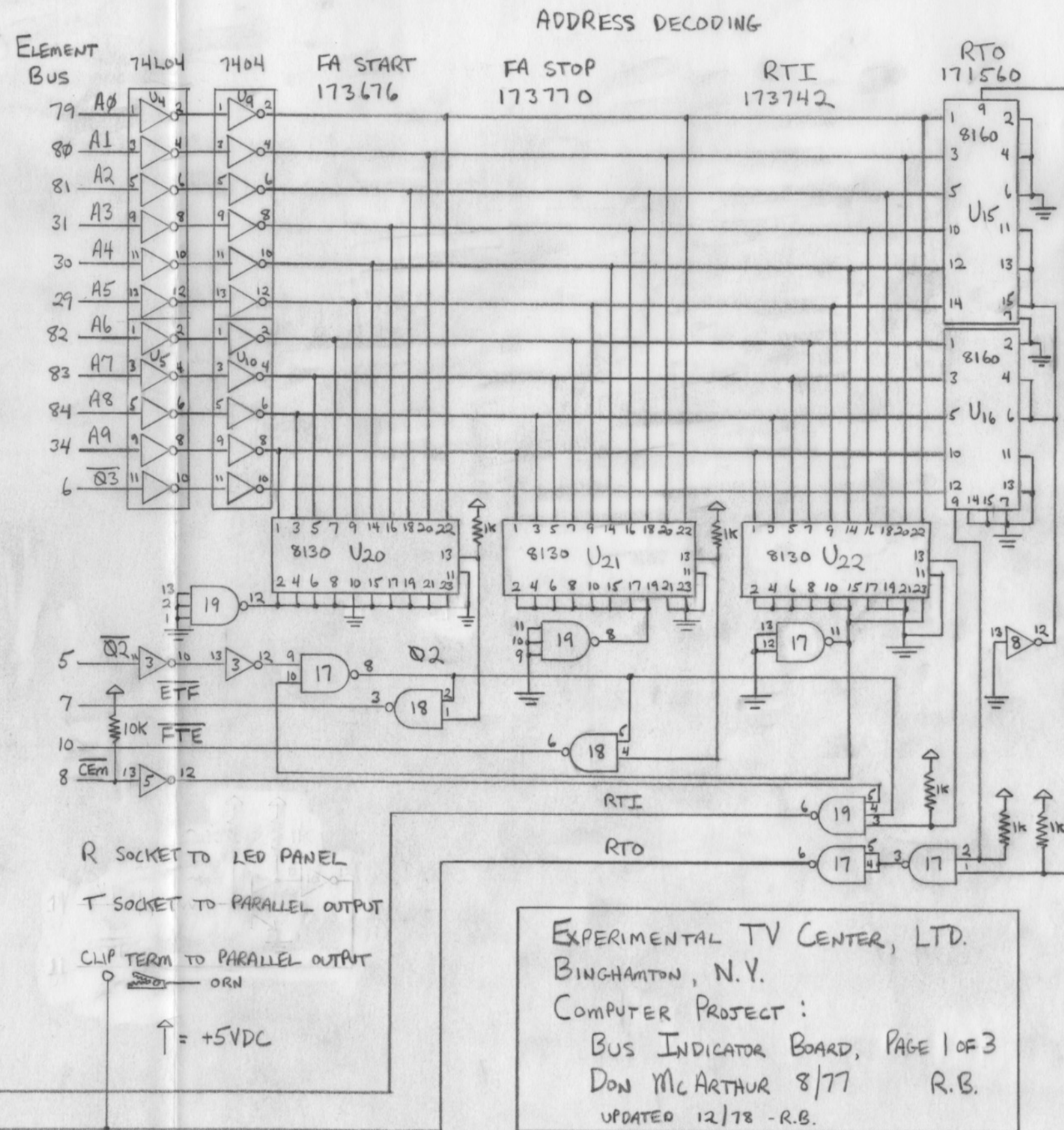
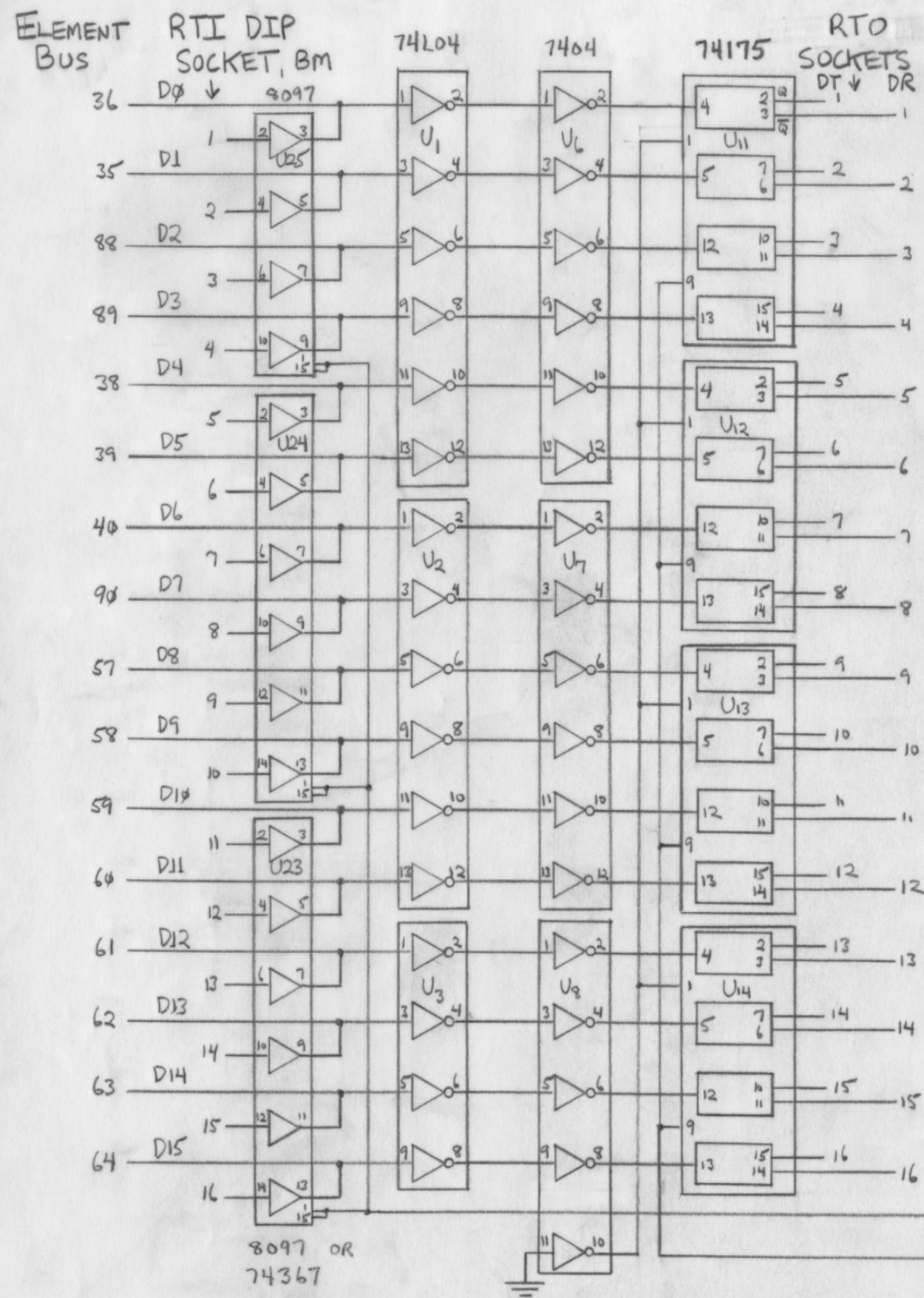
| QUANTITY | DESCRIPTION | Vcc Pin | GND Pin |
|----------|--|---------|---------|
| 4 | SN7400N QUAD 2-INPUT NAND | 14 | 7 |
| 2 | SN7402N QUAD 2-INPUT NOR | 14 | 7 |
| 1 | SN7404N HEX INVERTER | 14 | 7 |
| 1 | SN7473N DUAL JK MASTER/SLAVE FLIP FLOP | 4 | 11 |
| 2 | SN74174N HEX D FLIP FLOP WITH CLEAR | 16 | 8 |
| 5 | DM8097N TRI-STATE HEX BUFFER | 16 | 8 |
| 1 | DM8160N 6-BIT COMPARATOR | 16 | 8 |
| 1 | DM8837N HEX UNIFIED BUS RECEIVER | 16 | 8 |
| 5 | DM8838N QUAD UNIFIED BUS TRANSCEIVER | 16 | 8 |
| 1 | DIGITAL W943 PROTOBOARD | | |
| 1 | BERG H854 CONNECTOR | | |
| 1 | 1N270 GERMANIUM DIODE | | |
| 1 | 200 Ω 1/4 WATT RESISTOR | | |
| 1 | 470 Ω " " | | |
| 1 | 1K " " | | |
| 1 | 22K " " | | |
| 1 | .01 μ F DISK CAPACITOR | | |
| 1 | .0027 μ F " " | | |

EXPERIMENTAL TV CENTER, LTD.
 BINGHAMTON, N.Y.
 COMPUTER PROJECT
 PARALLEL INTERFACE
 DON McARTHUR 1/77
 PAGE 1 OF 3 R.B.

UPDATED
1/79

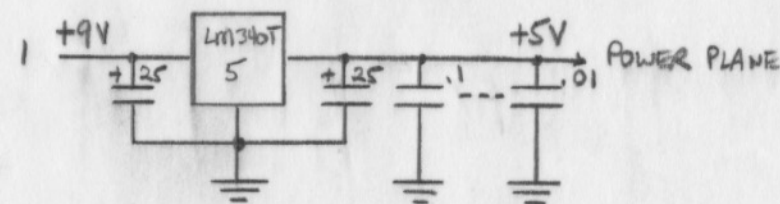
BERG
H854
D





PARTS LIST

| | |
|----|---|
| 1 | VECTOR 8800V UNIVERSAL 100-PIN PLUG-BOARD |
| 12 | 16-PIN DIP WIRE WRAP SOCKETS |
| 13 | 14-PIN DIP " " " |
| 3 | 24-PIN DIP " " " |
| 1 | HEAT SINK FOR REGULATOR |
| 1 | LM340T-5 REGULATOR |
| 1 | 2N3904 NPN TRANSISTOR |
| 1 | SN7400N QUAD 2-INPUT NAND |
| 1 | SN7403N QUAD 2-INPUT NAND, OPEN COLLECTOR |
| 1 | SN7410N TRIPLE 3-INPUT NAND |
| 5 | SN7404N HEX INVERTER |
| 5 | SN74L04N HEX INVERTER |
| 4 | SN74175N QUAD D FLIP FLOP |
| 3 | DM8097N TRI-STATE HEX BUFFER |
| 3 | DM8130N 10-BIT COMPARATOR |
| 2 | DM8160N 6-BIT COMPARATOR |
| 3 | 22 μ f 25V ELECTROLYTIC CAPACITOR |
| 3 | .1 μ f 35V TANTALUM CAPACITOR |
| 10 | .01 μ f 100V MYLAR CAPACITOR |
| 6 | 1K 1/4 WATT RESISTOR |
| 1 | 2K 1/4 WATT RESISTOR |
| 1 | 20K 1/4 WATT RESISTOR |



| NUMBER | CHIP | LOCATION | VCC PIN | GND PIN |
|-----------------|-------|----------|---------|---------|
| U ₁ | 74L04 | AV | 14 | 7 |
| U ₂ | 74L04 | AT | 14 | 7 |
| U ₃ | 74L04 | AS | 14 | 7 |
| U ₄ | 74L04 | AR | 14 | 7 |
| U ₅ | 74L04 | AP | 14 | 7 |
| U ₆ | 7404 | BV | 14 | 7 |
| U ₇ | 7404 | BT | 14 | 7 |
| U ₈ | 7404 | BS | 14 | 7 |
| U ₉ | 7404 | BR | 14 | 7 |
| U ₁₀ | 7404 | BP | 14 | 7 |
| U ₁₁ | 74175 | CW | 16 | 8 |
| U ₁₂ | 74175 | CV | 16 | 8 |
| U ₁₃ | 74175 | CT | 16 | 8 |
| U ₁₄ | 74175 | CS | 16 | 8 |
| U ₁₅ | 8160 | CR | 16 | 8 |
| U ₁₆ | 8160 | CP | 16 | 8 |
| U ₁₇ | 7400 | CN | 14 | 7 |
| U ₁₈ | 7403 | CM | 14 | 7 |
| U ₁₉ | 7410 | CL | 14 | 7 |
| U ₂₀ | 8130 | DPN | 24 | 12 |
| U ₂₁ | 8130 | DNM | 24 | 12 |
| U ₂₂ | 8130 | DML | 24 | 12 |
| U ₂₃ | 8097 | AN | 16 | 8 |
| U ₂₄ | 8097 | AM | 16 | 8 |
| U ₂₅ | 8097 | AL | 16 | 8 |

BUFFER MEMORY ADDRESS MAP

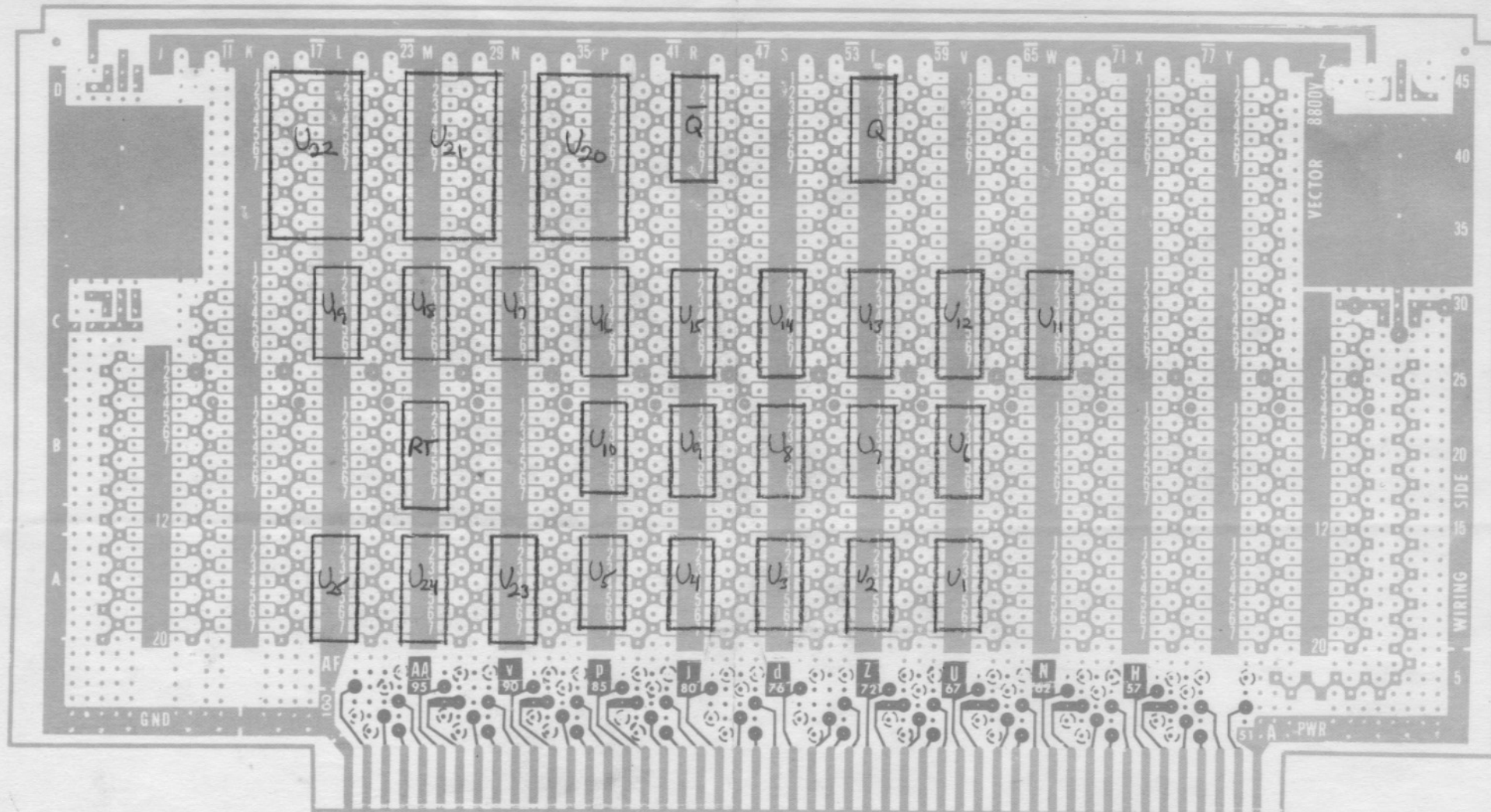
| | |
|--------|---|
| 170000 | |
| 170040 | |
| 170076 | 16 D/A'S |
| 171560 | BUS INDICATOR (U ₁₅ , U ₁₆) |
| 173676 | |
| 173742 | FEATURE AREA |
| 173770 | F.A. START (U ₂₀) REAL TIME INPUT (U ₂₂) F.A. STOP (U ₂₁) |
| 173776 | STATUS REGISTER |

THE FOUR CIRCUITS ON THE BUS INDICATOR CARD

- ① BUS INDICATOR CIRCUIT
- ② BUFFER MEMORY MODE CONTROLLER
- ③ REAL-TIME INPUT CIRCUIT
- ④ V.D. TO TTL CONVERTER

EXPERIMENTAL TV CENTER, LTD.
BINGHAMTON, N.Y.
COMPUTER PROJECT
BUS INDICATOR BOARD 8/77
DON McARTHUR
PAGE 2 OF 3 R.B.

BUS INDICATOR



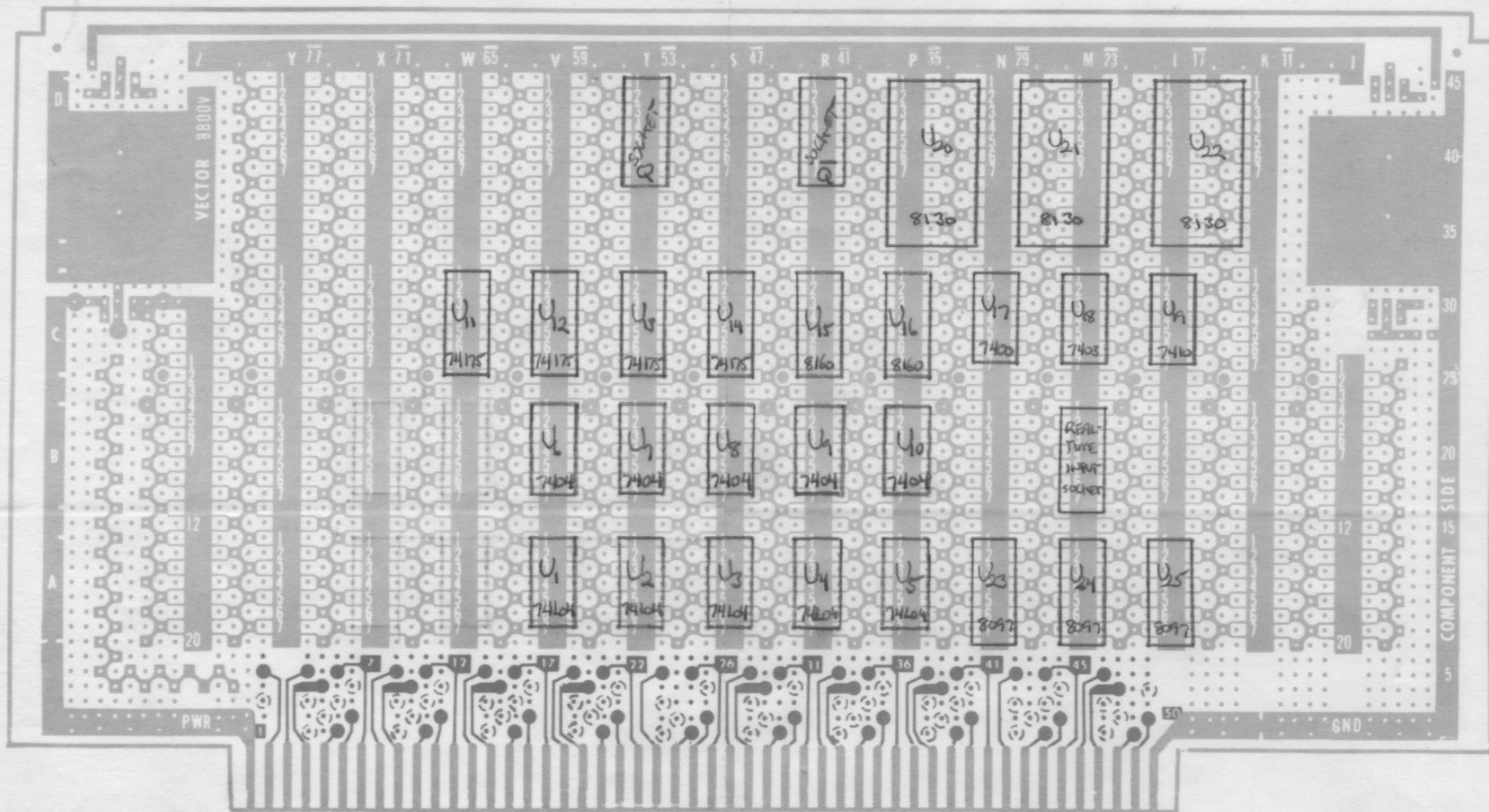
NOTES:

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VECTOR D.I.P. PLUGBORD
PATTERN .042" x 0.1" SPACED HOLES
LA13P2 LAYOUT PAPER

VECTOR ELECTRONIC CO., INC.
12460 GLADSTONE AVE.
SYLMAR, CALIFORNIA 91342

BUS INDICATOR



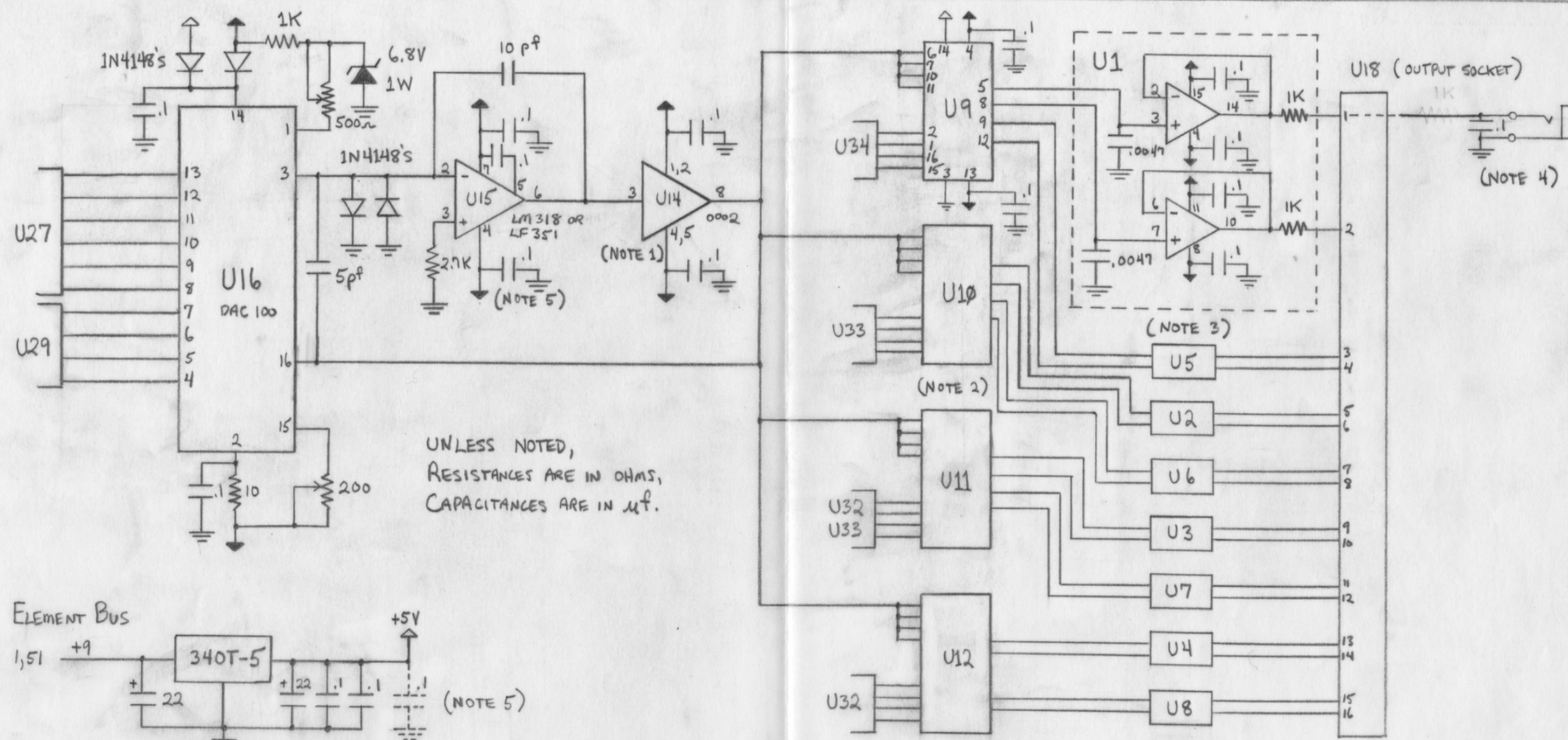
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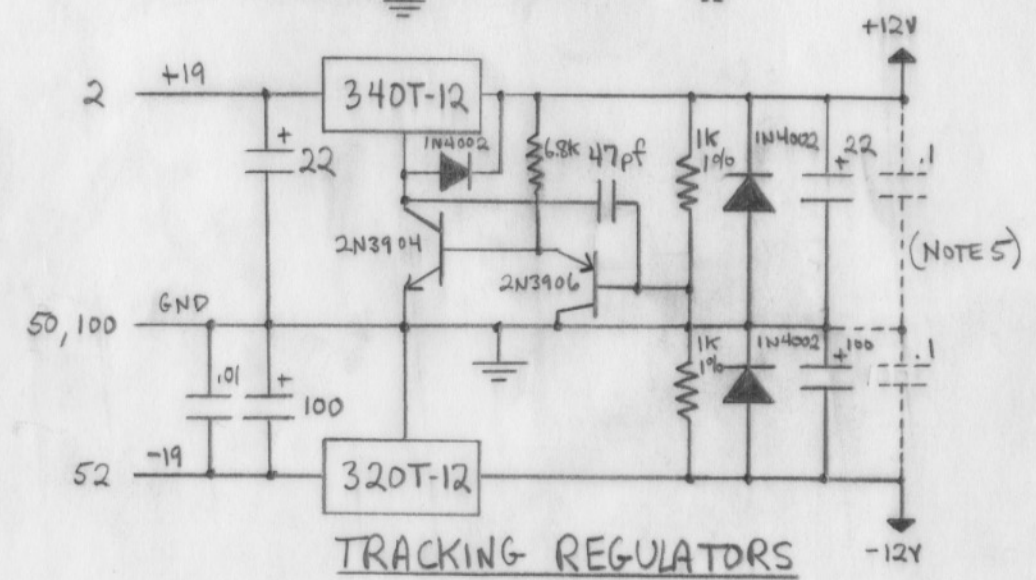
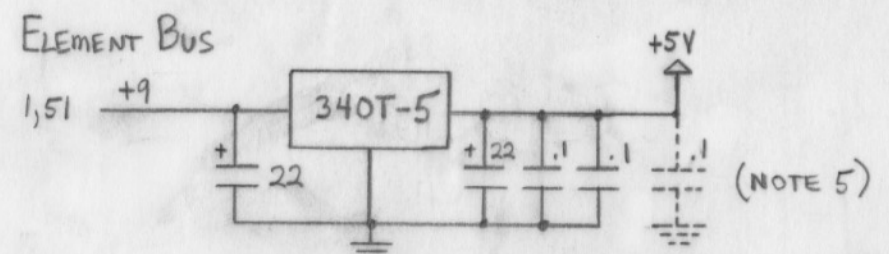
ETC, LTD.
BINGHAMTON, N.Y.
8/77 R.B.
PAGE 3 OF 3

VECTOR D.I.P. PLUGBORD
PATTERN .042" x 0.1" SPACED HOLES
LA13P1 LAYOUT PAPER

VECTOR ELECTRONIC CO., INC.
12460 GLADSTONE AVE.
SYLMAR, CALIFORNIA 91342



UNLESS NOTED,
RESISTANCES ARE IN OHMS,
CAPACITANCES ARE IN μF .



TRACKING REGULATORS

NOTES :

- 1) U14 (LH0002CN) IS A 10-PIN DIP.
- 2) U10-U12 ARE CONFIGURED SIMILARLY TO U9, AH0015.
- 3) U2-U8 ARE CONFIGURED SIMILARLY TO U1, WHICH CONSISTS OF 2 LM307N CHIPS IN ONE 16-PIN SOCKET.
- 4) SEE DESCRIPTION OF D/A OUTPUT PANEL.
- 5) .1 μF TANTALUM CAPACITORS ARE PLACED CLOSE TO POWER SUPPLY PINS OF ALL ANALOG CHIPS.

EXPERIMENTAL TV CENTER, LTD
BINGHAMTON, N.Y.
COMPUTER PROJECT
D/A BOARD (PAGE 2 OF 4)
ANALOG SECTION
DON McARTHUR 8/77 R.B.

UPDATED 1/79

PARTS LIST

| | |
|----|---|
| 1 | VECTOR 8800V UNIVERSAL 100-PIN PLUG-BOARD |
| 26 | 16-PIN DIP WIRE WRAP SOCKETS |
| 8 | 14-PIN DIP " " " |
| 1 | 24-PIN DIP |
| 3 | HEAT SINKS |
| 1 | LM340T-5 VOLTAGE REGULATOR CHIP |
| 1 | LM340T-12 " " " |
| 1 | LM320T-12 " " " |
| 1 | 2N3904 TRANSISTOR (NPN) |
| 1 | 2N3906 " (PNP) |
| 1 | 1N4148 DIODES |
| 3 | 1N4002 DIODES |
| 1 | 6.8V 1WATT ZENER DIODE |
| 1 | SN7400N QUAD 2-INPUT NAND |
| 6 | SN7404N HEX INVERTER |
| 3 | SN7489N 64-BIT RAM |
| 1 | SN74123N MONOSTABLE MULTIVIBRATOR |
| 1 | SN74154N 4-LINE TO 16-LINE DEMULTIPLEXER |
| 1 | SN74157N QUAD 2:1 DATA SELECTOR |
| 1 | SN74161N BINARY COUNTER |
| 1 | DM8131N 6-BIT UNIFIED BUS COMPARATOR |
| 3 | DM8837N HEX UNIFIED BUS RECEIVER |
| 1 | DAC100 10-BIT D/A |
| 1 | LM318N HIGH SPEED OP AMP |
| 1 | LH0002CN CURRENT AMP |
| 3 | AH0015CD QUAD ANALOG SWITCH |
| 16 | LM307N OP AMP |

CAPACITORS

| | |
|----|------------------------|
| 2 | 100µf 25V ELECTROLYTIC |
| 4 | 22µf 25V " |
| 1 | 1µf 50V " |
| 38 | .1µf 35V TANTALUM |
| 1 | .05µf DISK |
| 1 | .01µf MYLAR |
| 16 | .0047µf " |
| 2 | .0027µf DISK |
| 1 | 47pf " |
| 1 | 10pf " |
| 1 | 5pf " |

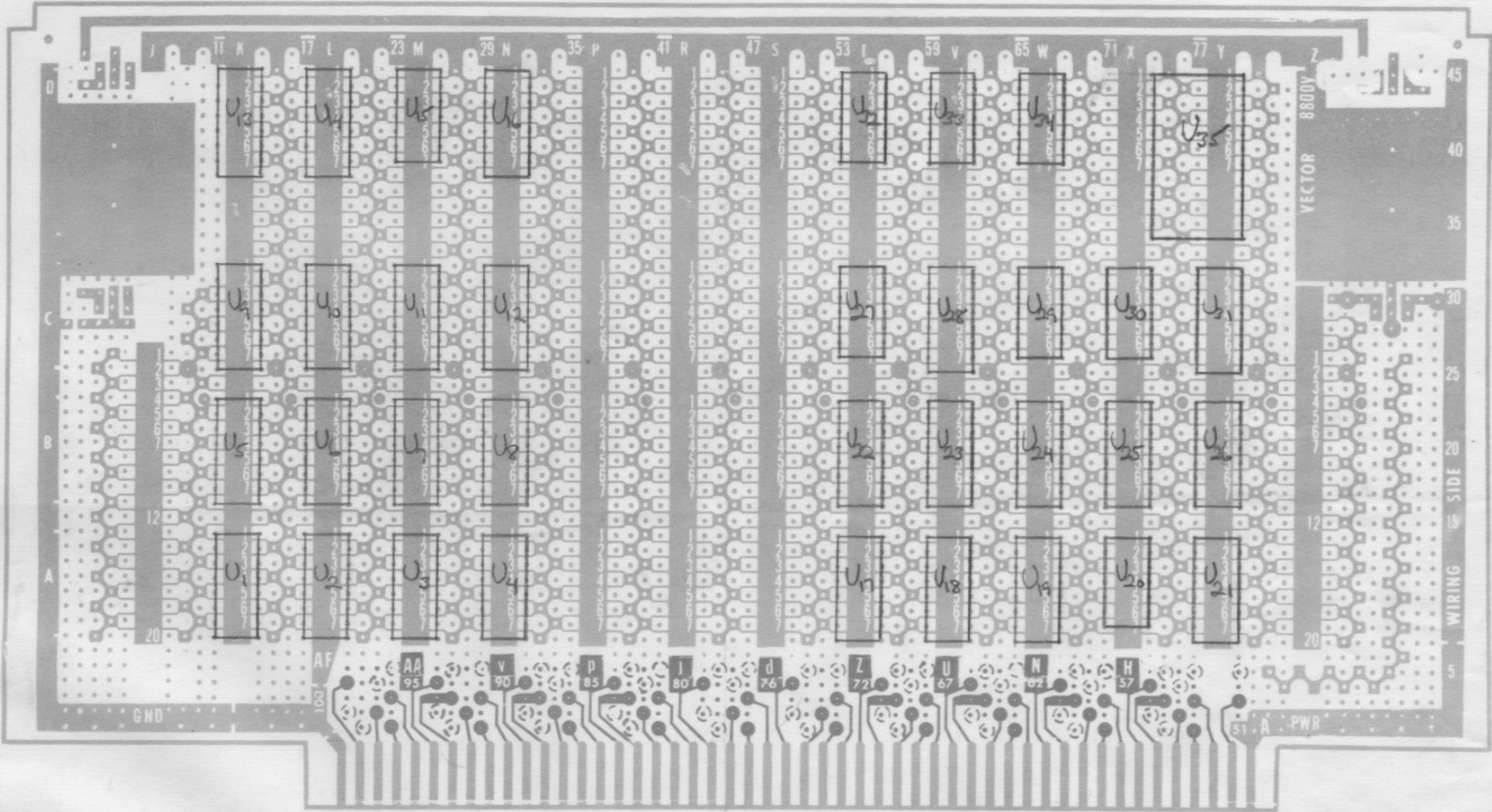
RESISTORS

| | |
|---|-----------------|
| 2 | 1K 1/2 WATT 1% |
| 1 | 12K 1/4 WATT 5% |
| 1 | 10K " |
| 1 | 6.8K " |
| 1 | 2.7K " |
| 1 | 1K " |
| 1 | 100Ω " |
| 1 | 82Ω " |
| 1 | 10Ω " |
| 1 | 500Ω TRIMPOT |
| 1 | 200Ω " |

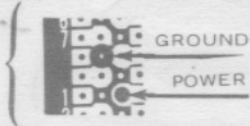
| NUMBER | CHIP | LOCATION | +12 PIN | -12 PIN | +5 PIN | GND PIN |
|--------|------------|----------|---------|---------|--------|---------|
| U1 | 2-307 | AK | 11, 15 | 4, 8 | | |
| U2 | 2-307 | AL | 11, 15 | 4, 8 | | |
| U3 | 2-307 | AM | 11, 15 | 4, 8 | | |
| U4 | 2-307 | AN | 11, 15 | 4, 8 | | |
| U5 | 2-307 | BK | 11, 15 | 4, 8 | | |
| U6 | 2-307 | BL | 11, 15 | 4, 8 | | |
| U7 | 2-307 | BM | 11, 15 | 4, 8 | | |
| U8 | 2-307 | BN | 11, 15 | 4, 8 | | |
| U9 | AH0015 | CK | 4 | 13 | 14 | 3 |
| U10 | AH0015 | CL | 4 | 13 | 14 | 3 |
| U11 | AH0015 | CM | 4 | 13 | 14 | 3 |
| U12 | AH0015 | CN | 4 | 13 | 14 | 3 |
| U13 | OUT SOCKET | DK | | | | |
| U14 | LH0002 | DL | 1, 2 | 4, 5 | | |
| U15 | LM318 | DM | 7 | 4 | | |
| U16 | DAC100 | DN | 14 | 2 | | |
| U17 | 8837 | AT | | | 16 | 8 |
| U18 | 8837 | AY | | | 16 | 8 |
| U19 | 8837 | AW | | | 16 | 8 |
| U20 | 7400 | AX | | | 14 | 7 |
| U21 | 8131 | AY | | | 16 | 8 |
| U22 | 7489 | BT | | | 16 | 8 |
| U23 | 7489 | BV | | | 16 | 8 |
| U24 | 7489 | BW | | | 16 | 8 |
| U25 | 74157 | BX | | | 16 | 8 |
| U26 | 74161 | BY | | | 16 | 8 |
| U27 | 7404 | CT | | | 14 | 7 |
| U28 | PULL-UPS | CV | | | 16 | |
| U29 | 7404 | CW | | | 14 | 7 |
| U30 | 7404 | CX | | | 14 | 7 |
| U31 | 74123 | CY | | | 16 | 8 |
| U32 | 7404 | DT | | | 14 | 7 |
| U33 | 7404 | DV | | | 14 | 7 |
| U34 | 7404 | DW | | | 14 | 7 |
| U35 | 74154 | DX | | | 24 | 12 |

EXPERIMENTAL TV CENTER, LTD., BINGHAMTON, N.Y.
 COMPUTER PROJECT : D/A BOARD (PAGE 3 OF 4)
 DON MCARTHUR 8/77 R.B.

D/A



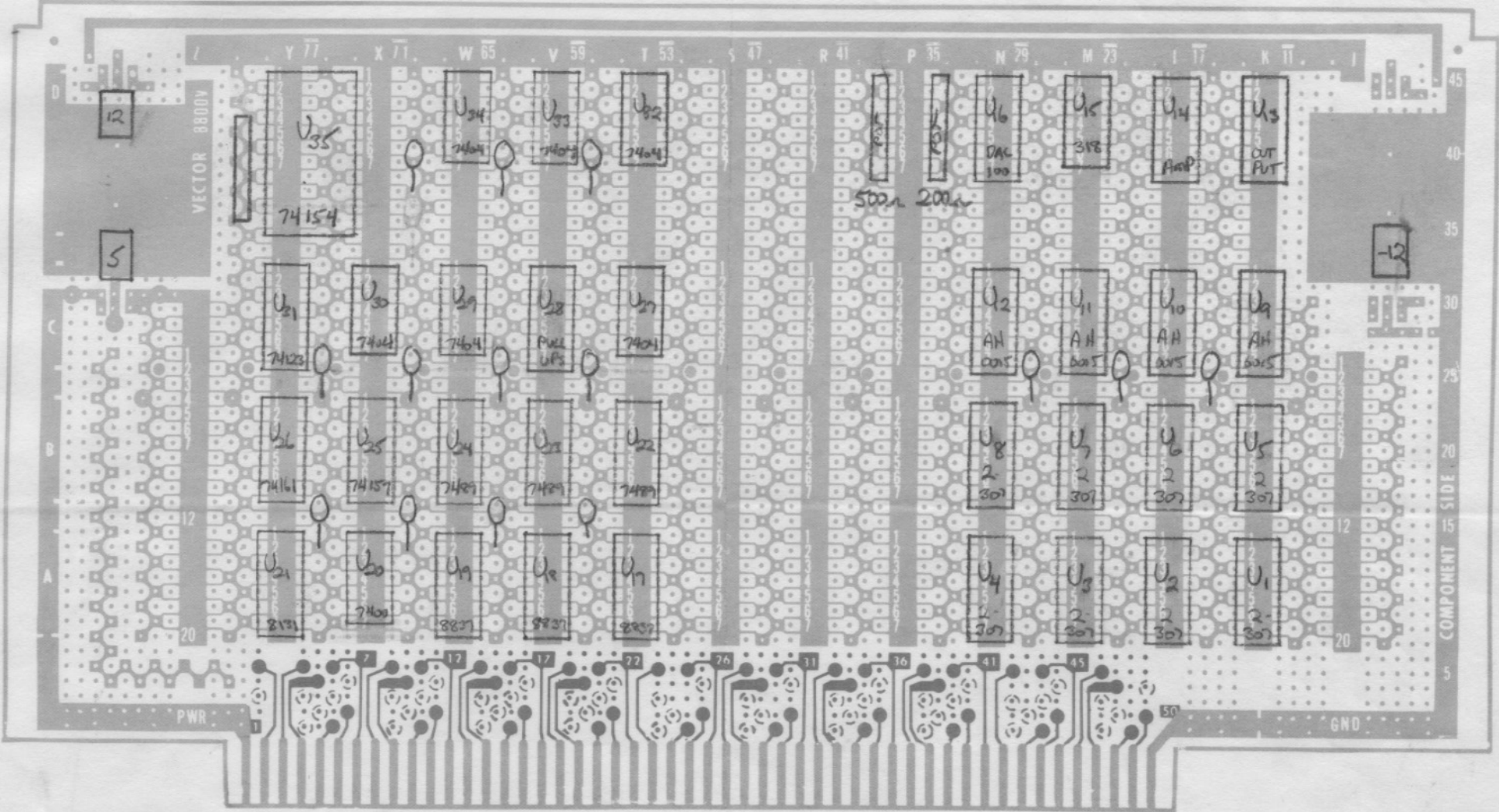
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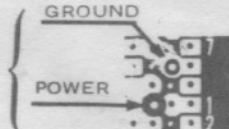
VECTOR D.I.P. PLUGBOARD
PATTERN .042" x 0.1" SPACED HOLES
LA13P2 LAYOUT PAPER

VECTOR ELECTRONIC CO., INC.
12460 GLADSTONE AVE.
SYLMAR, CALIFORNIA 91342

D/A



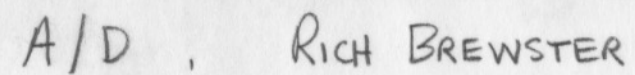
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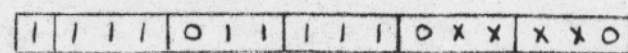
E.T.C., LTD.
BINGHAMTON, N.Y.
8/77 R.B.
PAGE 4 OF 4

VECTOR D.I.P. PLUGBOARD
PATTERN .042" x 0.1" SPACED HOLES
LA13P1 LAYOUT PAPER

VECTOR ELECTRONIC CO., INC.
12460 GLADSTONE AVE.
SYLMAR, CALIFORNIA 91342



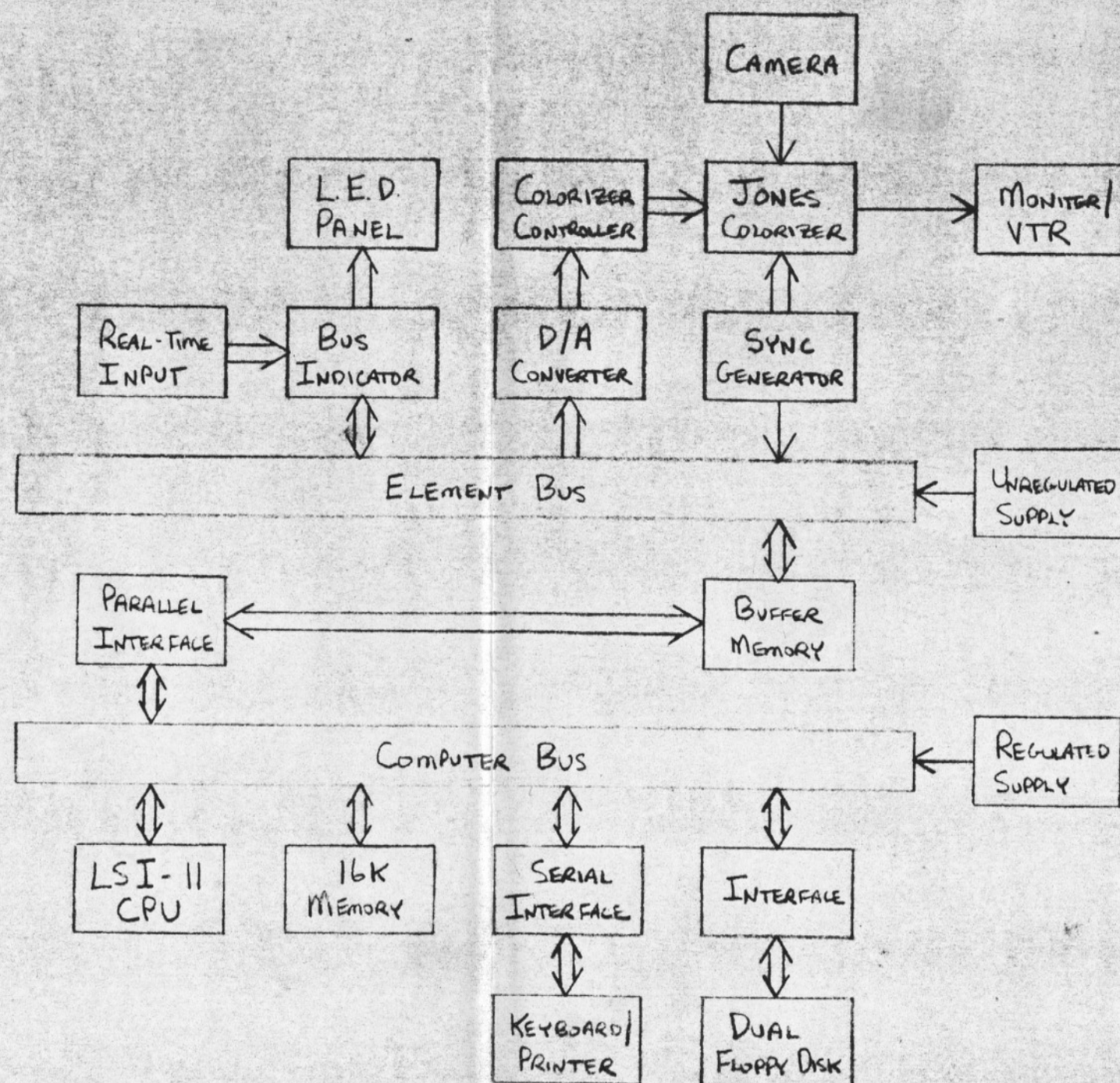
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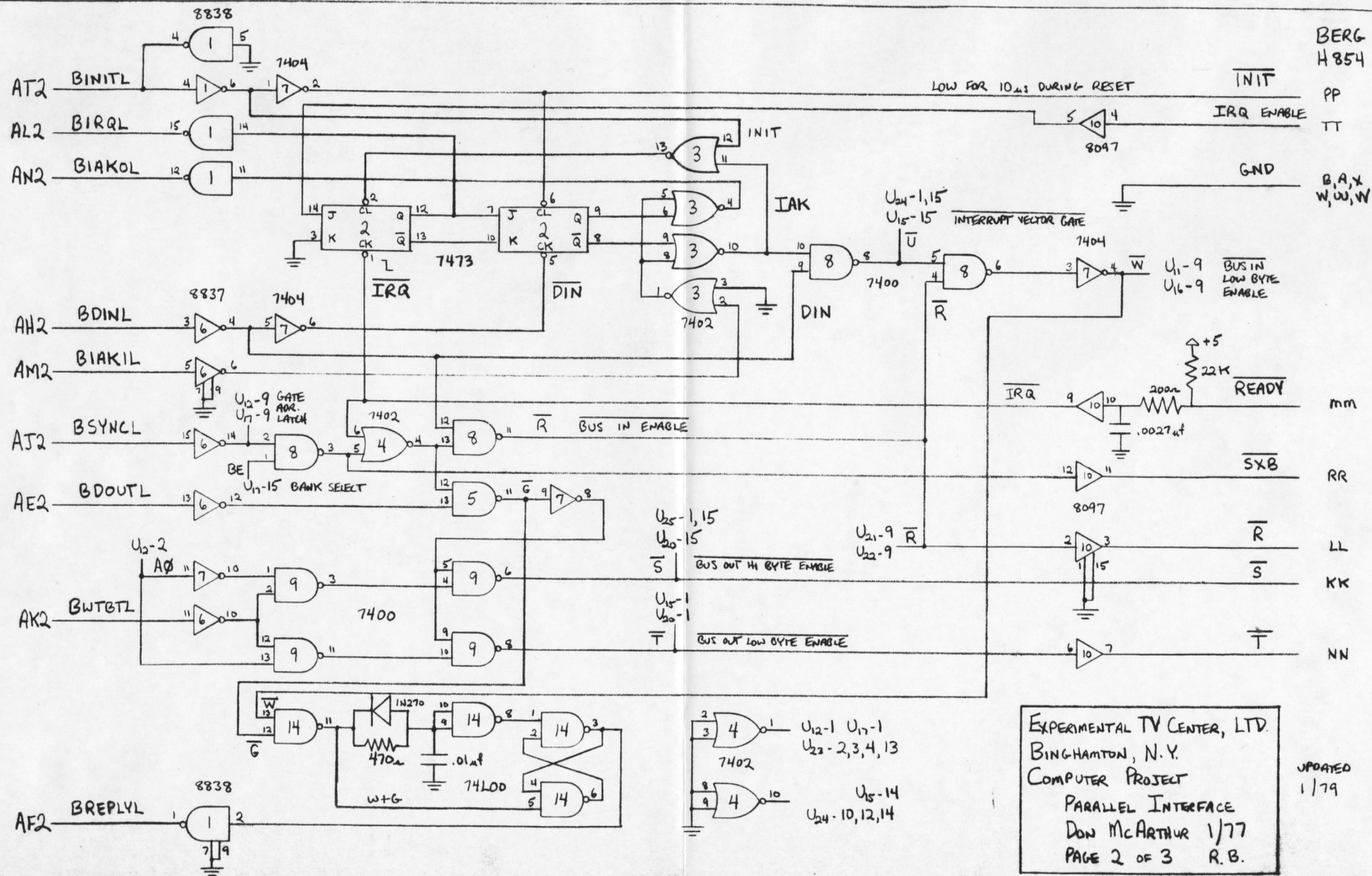


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173736

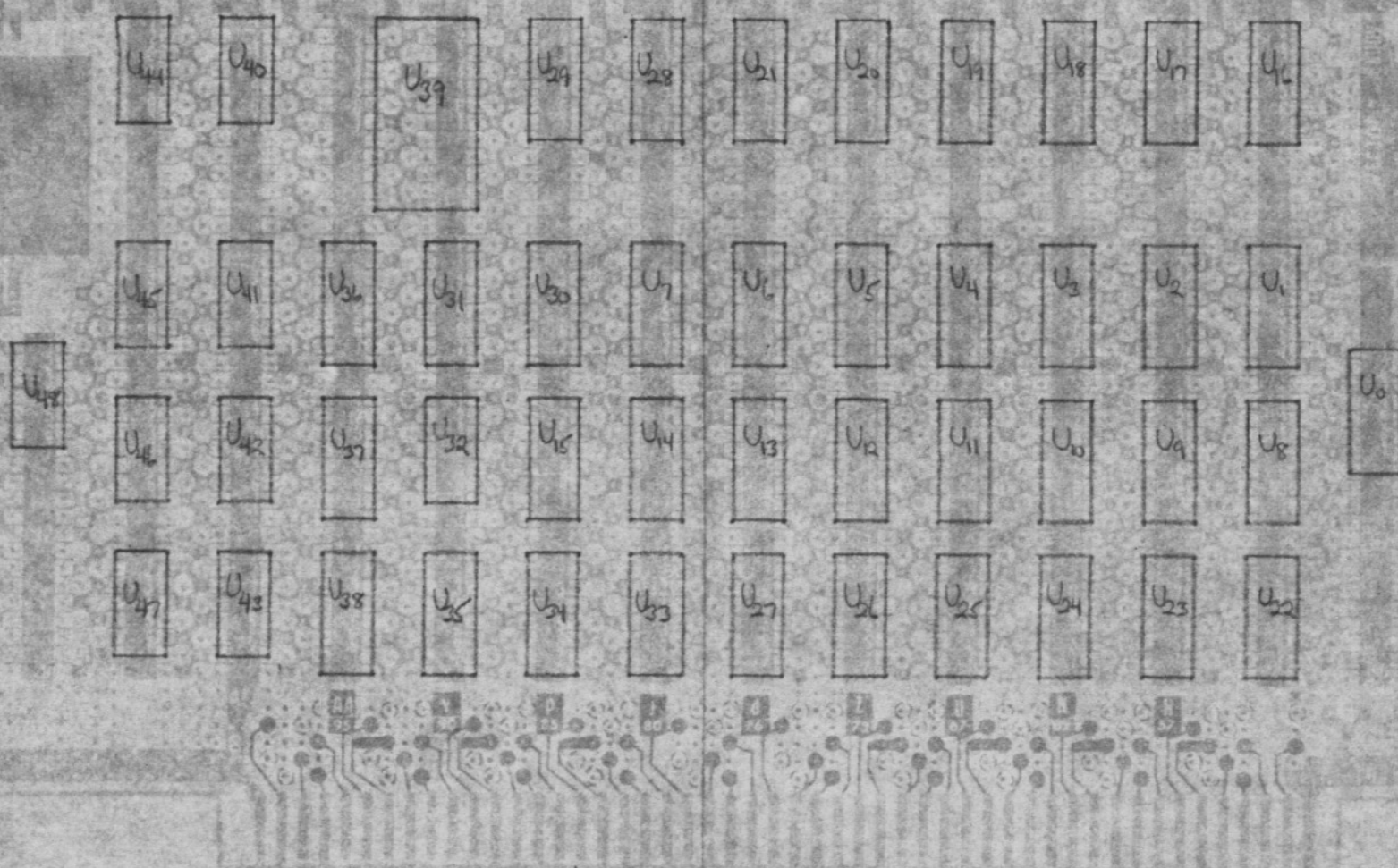
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| SCALE: | APPROVED BY: | DRAWN BY | R.B. |
| DATE: 10/78 | | REVISED | |
| EXPERIMENTAL TV CENTER, LTD. | | | |
| BINGHAMTON, N.Y. | | DRAWING NUMBER 2 OF 2 | |

EXPERIMENTAL TV CENTER, LTD.
 BINGHAMTON, N.Y.
 COMPUTER - BASED
 PROCESSING VIDEO SYNTHESIZER
 SYSTEM DIAGRAM, 9/77 R.B.





BUFFER MEMORY



NOTES:

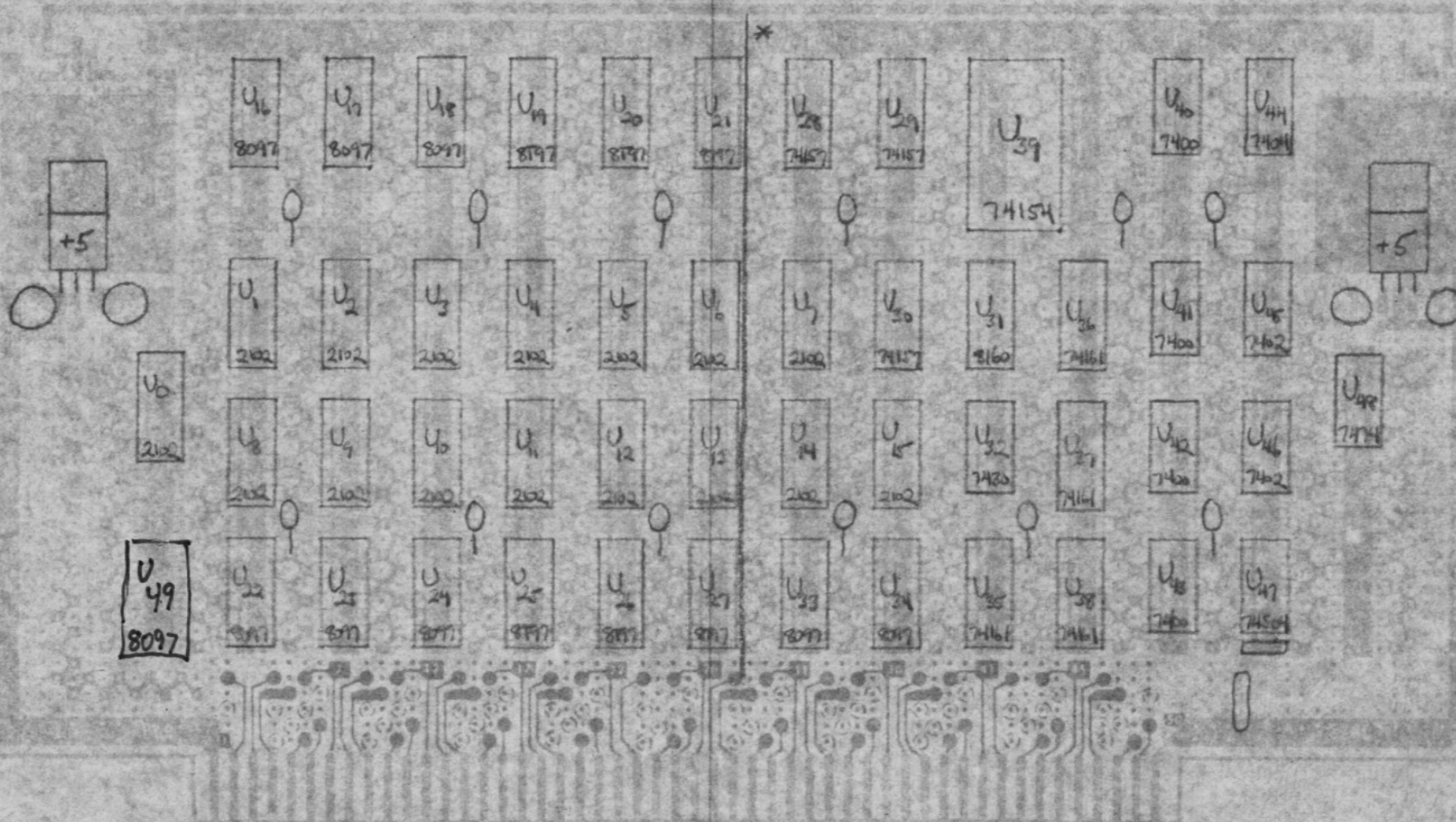
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VECTOR D.I.P. PLUGBOARD
PATTERN 042" X 0.1" SPACED HOLES
CALSP2 LAYOUT PAPER

VECTOR ELECTRONIC CO., INC.
12400 GLADSTONE AVE.
SYLMAR, CALIFORNIA 91342



BUFFER MEMORY



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* POWER PLANE CUT TO SEPARATE OUTPUTS* FROM TWO +5V REGULATORS

VECTOR D.I.P. PLUGBOARD
PATTERN 042" X 0.1" SPACED HOLES
CALSP1 LAYOUT PAPER

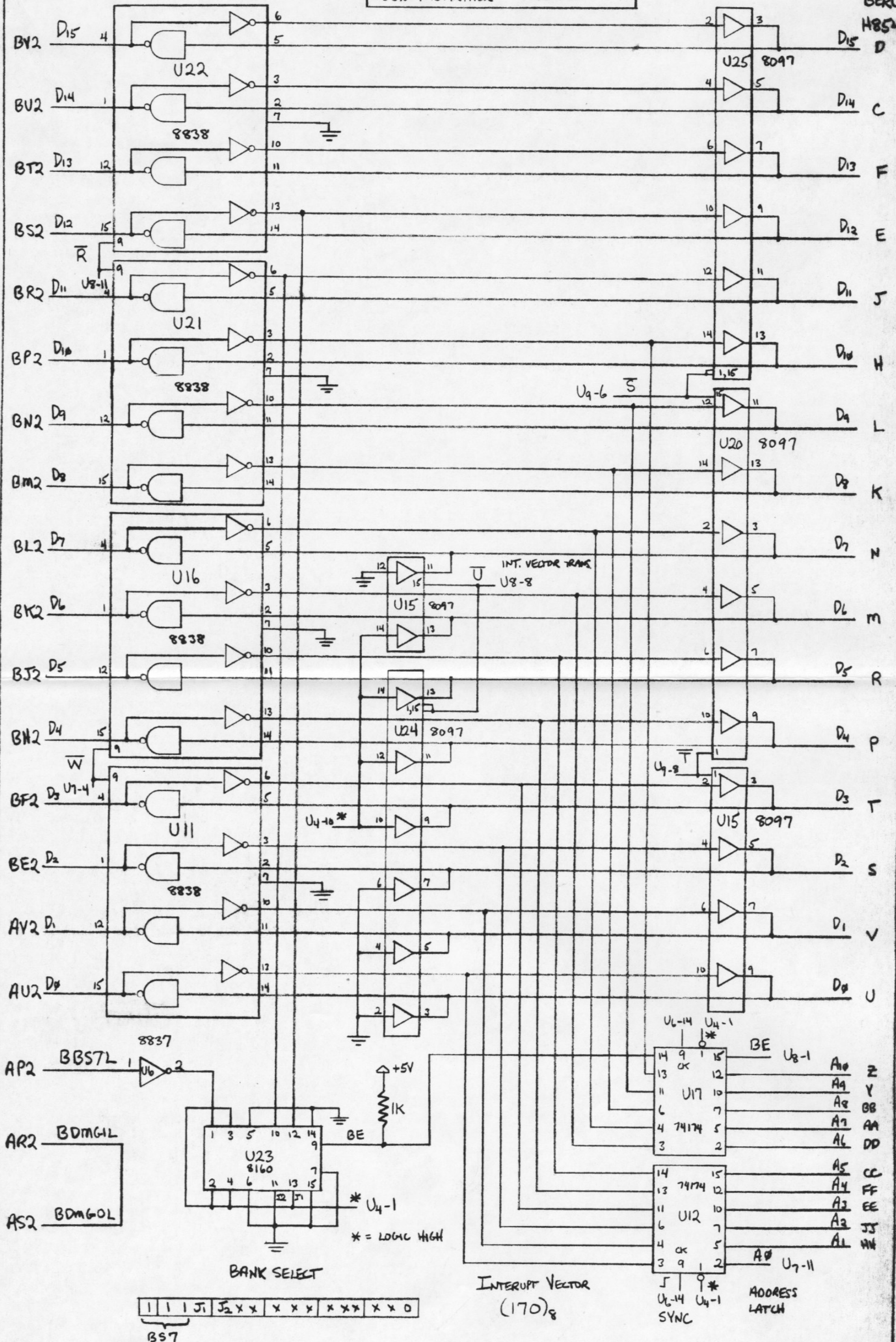
VECTOR ELECTRONIC CO., INC.
12400 GLADSTONE AVE.
SYLMAR, CALIFORNIA 91342



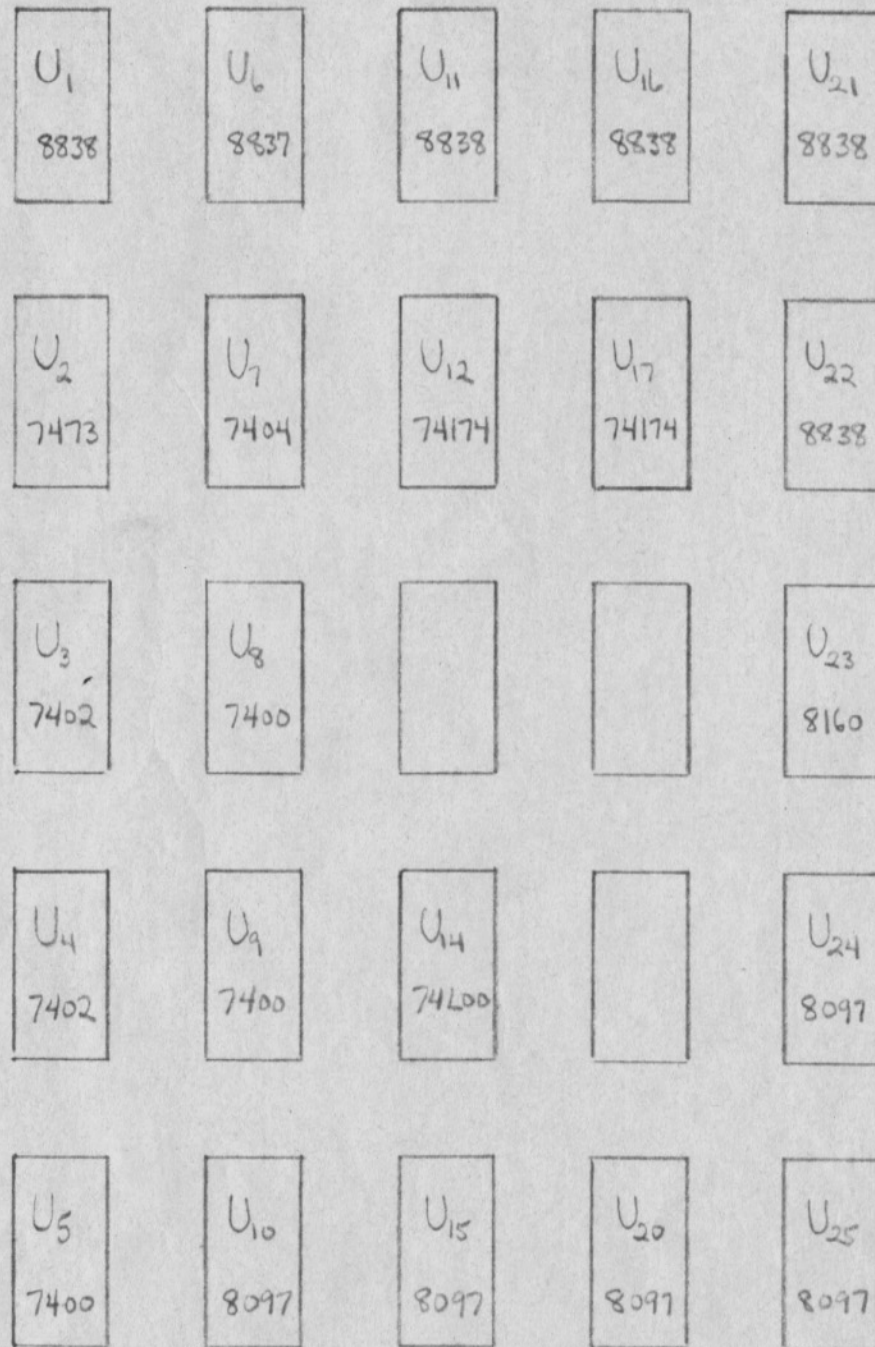
E.T.C., LTD.
BINGHAMTON, N.Y.
9/77 R.B.
PAGE 3 OF 3

UPDATED
1/79

BERG
H854
D



COMPONENT SIDE



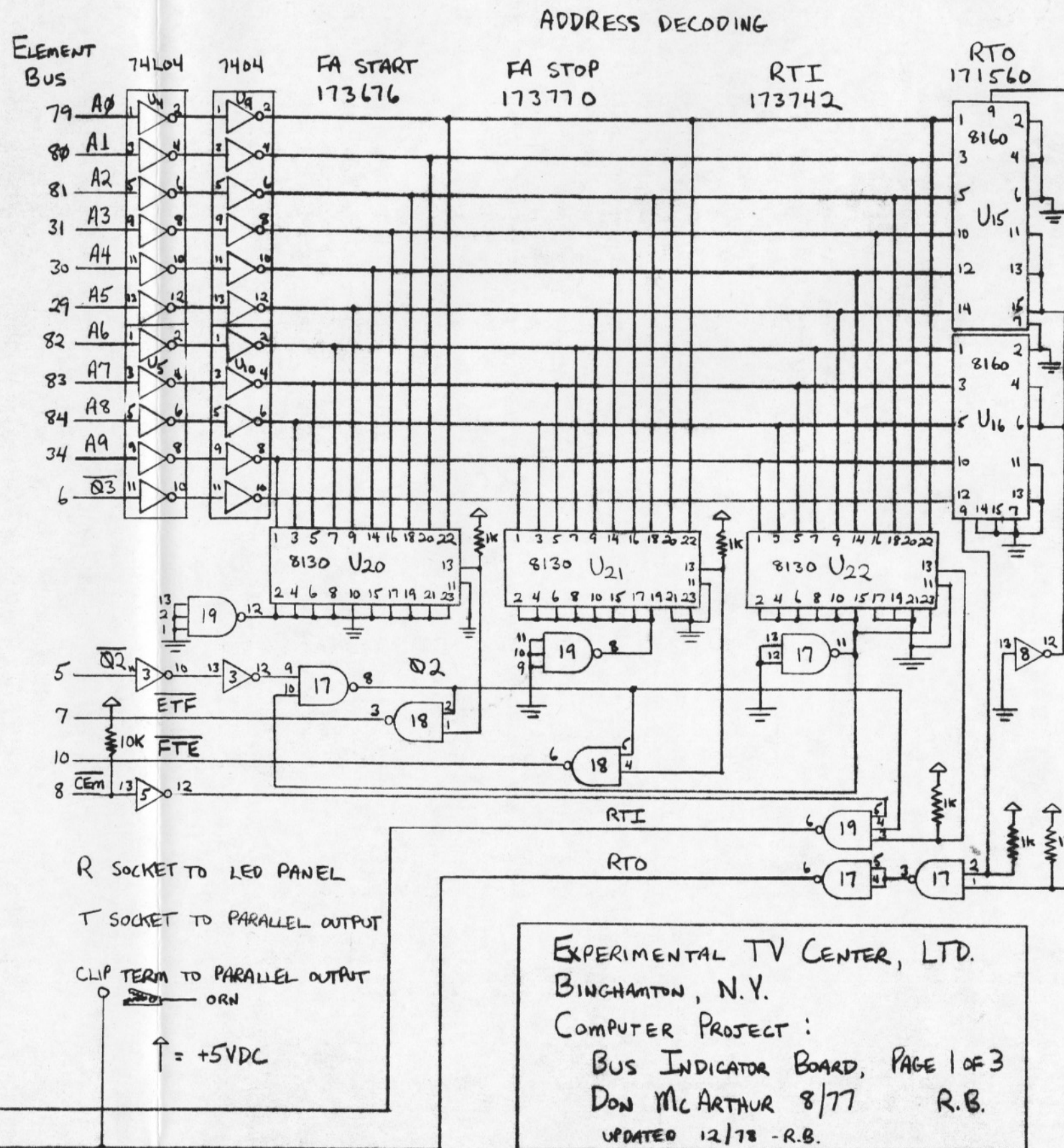
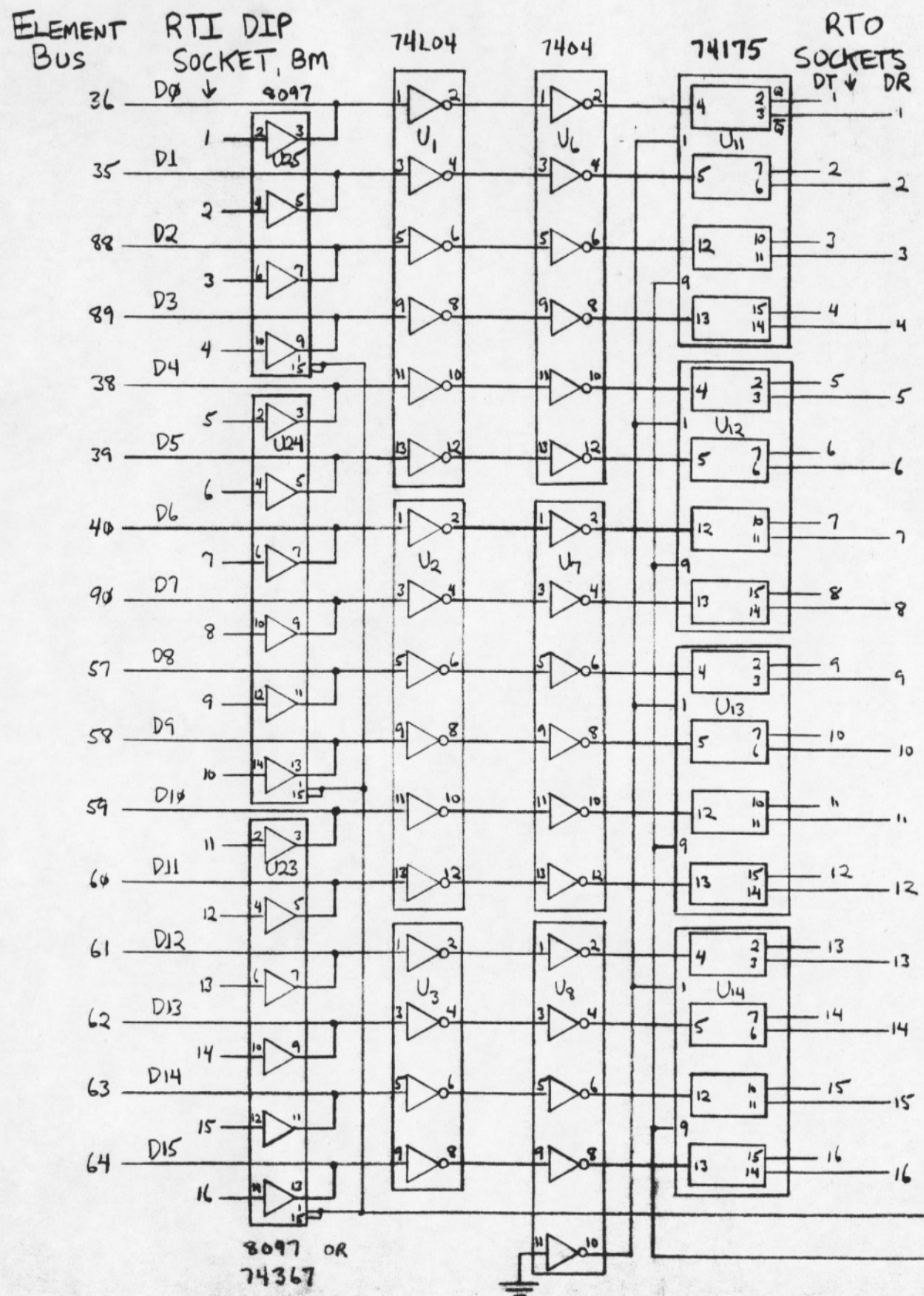
BERG H-854

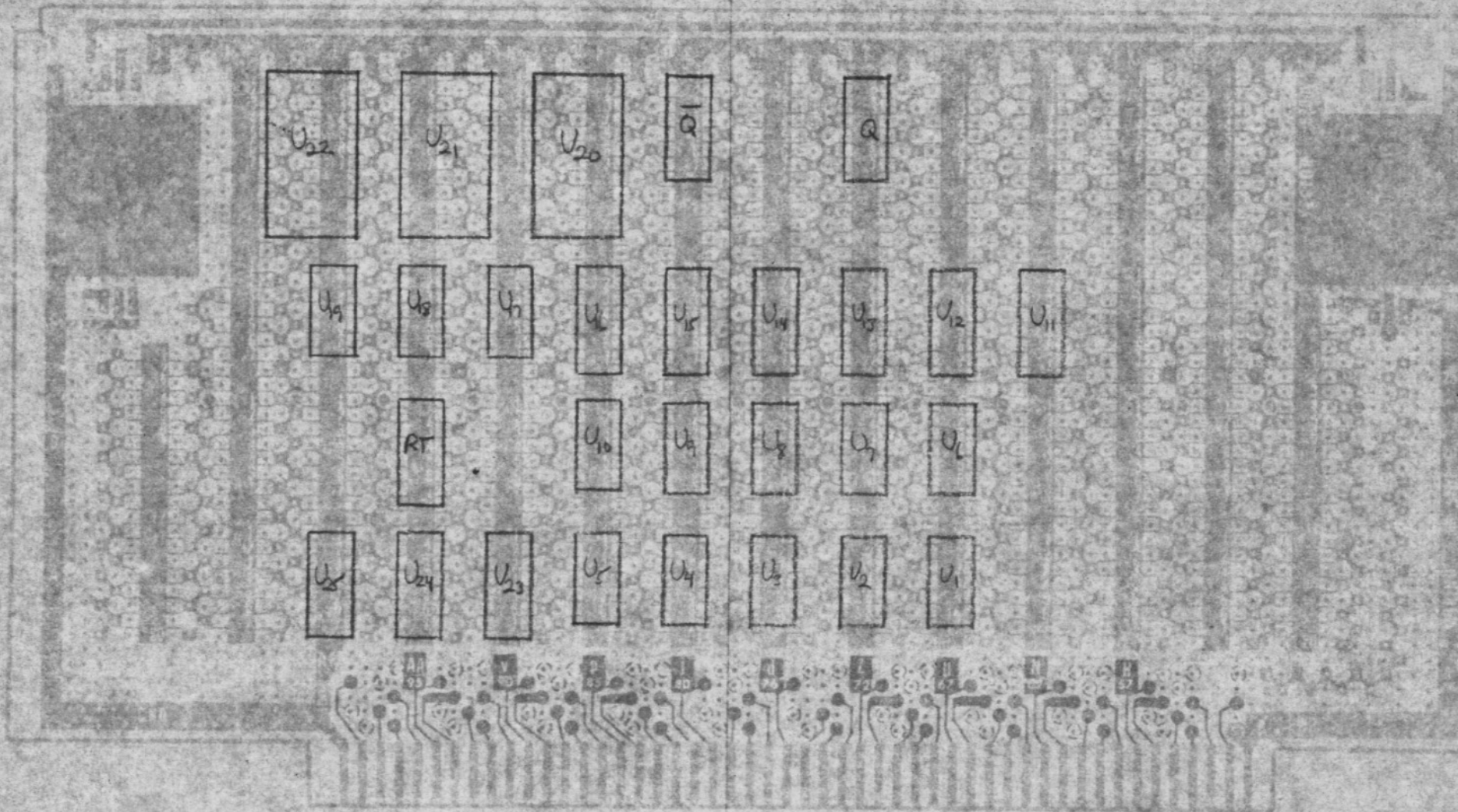
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308E YLWUE>3DWEYIWWX
308E YLWUE>3DWEYIWWX

PARTS LIST:

| QUANTITY | DESCRIPTION | VCC PIN | GND PIN |
|----------|--|---------|---------|
| 4 | SN7400N QUAD 2-INPUT NAND | 14 | 7 |
| 2 | SN7402N QUAD 2-INPUT NOR | 14 | 7 |
| 1 | SN7404N HEX INVERTER | 14 | 7 |
| 1 | SN7473N DUAL JK MASTER/SLAVE FLIP FLOP | 4 | 11 |
| 2 | SN74174N HEX D FLIP FLOP WITH CLEAR | 16 | 8 |
| 5 | DM8097N TRI-STATE HEX BUFFER | 16 | 8 |
| 1 | DM8160N 6-BIT COMPARETER | 16 | 8 |
| 1 | DM8837N HEX UNIFIED BUS RECEIVER | 16 | 8 |
| 5 | DM8838N QUAD UNIFIED BUS TRANCEIVER | 16 | 8 |
| 1 | DIGITAL W943 PROTOBOARD | | |
| 1 | BERG H854 CONNECTOR | | |
| 1 | 1N270 GERMANIUM DIODE | | |
| 1 | 200 Ω 1/4 WATT RESISTOR | | |
| 1 | 470 Ω " " | | |
| 1 | 1K " " | | |
| 1 | 22K " " | | |
| 1 | .01 μ F DISK CAPACITOR | | |
| 1 | .0057 μ F " " | | |

EXPERIMENTAL TV CENTER, LTD.
BINGHAMTON, N.Y.
COMPUTER PROJECT
PARALLEL INTERFACE
DON McARTHUR 1/77
PAGE 1 OF 3 R.B.





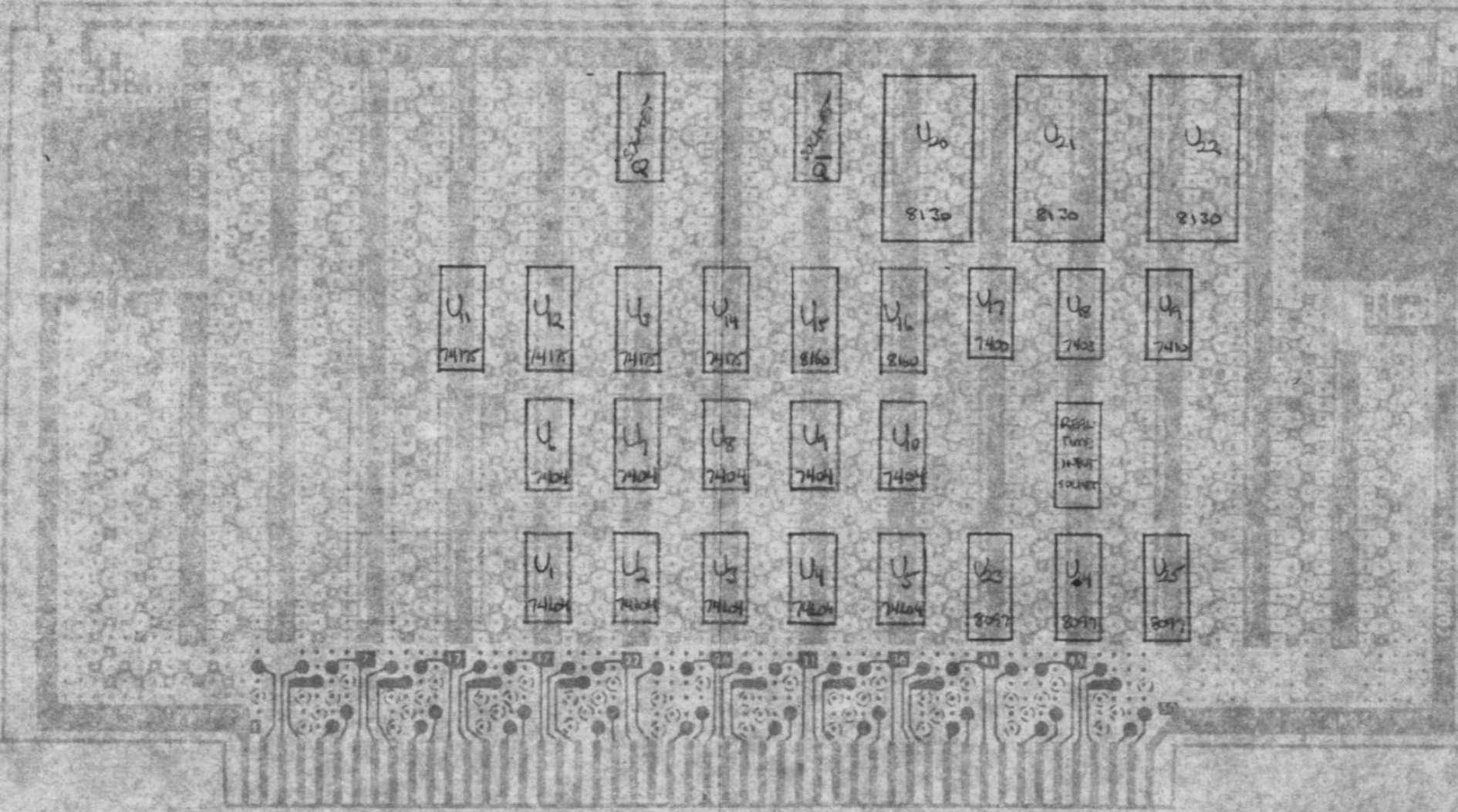
NOTES

4. RECOMMENDED LOCATION FOR 1464 TERMINALS IN POWER AND GROUND PLANES AT ROWS 23 & 25, AND RIGHT SIDE REGULATOR POSITION.
4. ZIG ZAG BUS PADS ON POWER PLANE ARE OFFSET FROM THOSE ON GROUND PLANE.
3. DASHED CIRCLES REPRESENT CONNECTOR CONTACT PADS ON OPPOSITE SIDE OF BOARD.
2. DRILL WITH 0.3" SPAN MOUNT OVER SOLID BUS COLUMNS.
1. ZONE LETTERS A TO D ON LEFT BORDER, AND 1 TO 2 ON TOP BORDER, ARE DRILL ROW & COLUMN DESIGNATION.



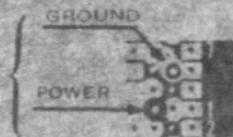
VECTOR D.I.P. PLUGBOARD
PATTERN .042" x 0.1" SPACED HOLES
LAL382 LAYOUT PAPER

VECTOR ELECTRONIC CO., INC.
12460 GLADSTONE AVE.
SYLMAR, CALIFORNIA 91342



NOTES

5. RECOMMENDED LOCATION FOR T46-4 TERMINALS IN POWER AND GROUND PLANES AT ROWS 23 & 25, AND LEFT SIDE REGULATOR POSITION.
6. ZIG-ZAG BUS PADS ON POWER PLANE ARE OFFSET FROM THOSE ON GROUND PLANE
7. DASHED CIRCLES REPRESENT CONNECTOR CONTACT PADS ON OPPOSITE SIDE OF BOARD
8. DIPS WITH 0.3" SPAN MOUNT OVER SOLID BUS COLUMNS
9. ZONE LETTERS A TO D ON LEFT BORDER, AND J TO Z ON TOP BORDER ARE DIP ROW & COLUMN DESIGNATOR

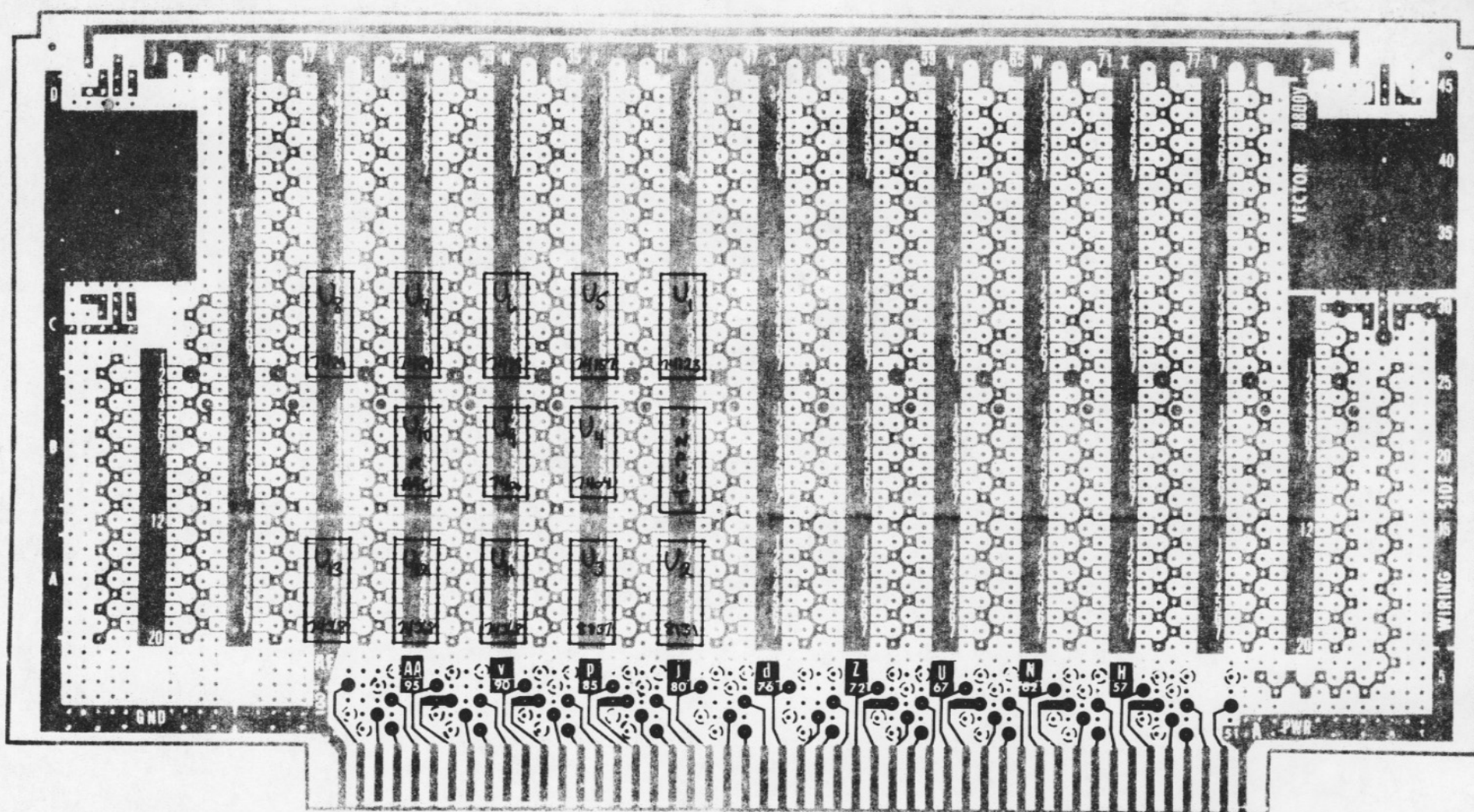


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BINGHAMTON, N.Y.
8/77 R.B.
PAGE 3 OF 3

VECTOR D.I.P. PLUGBOARD
PATTERN .042" x 0.1" SPACED HOLES
LA13PI LAYOUT PAPER

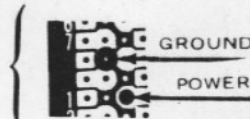
VECTOR ELECTRONIC CO., INC.
12450 GLADSTONE AVE.
SYLMAR, CALIFORNIA 91342

A/D



NOTES:

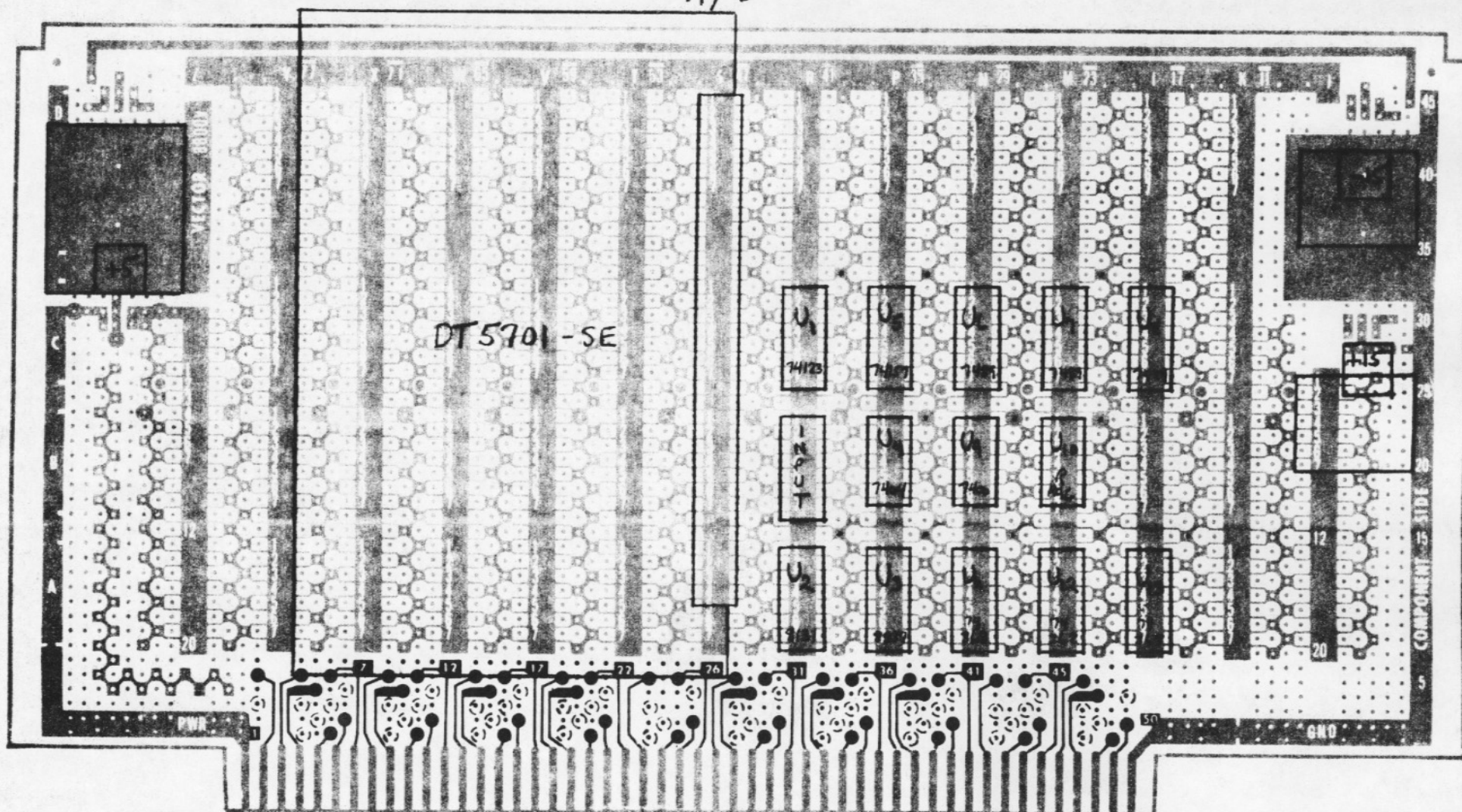
5. RECOMMENDED LOCATION FOR T46-4 TERMINALS IN POWER AND GROUND PLANES AT ROWS 23 & 25, AND RIGHT SIDE REGULATOR POSITION.
4. ZIG-ZAG BUS PADS ON POWER PLANE ARE OFFSET FROM THOSE ON GROUND PLANE
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1. ZONE LETTERS A TO D ON LEFT BORDER, AND J TO Z ON TOP BORDER ARE DIP ROW & COLUMN DESIGNATORS



VECTOR D.I.P. PLUGBOARD
PATTERN .042" x 0.1" SPACED HOLES
LA13P2 LAYOUT PAPER

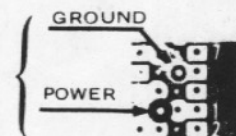
VECTOR ELECTRONIC CO., INC.
12460 GLADSTONE AVE.
SYLMAR, CALIFORNIA 91342

A/D



NOTES:

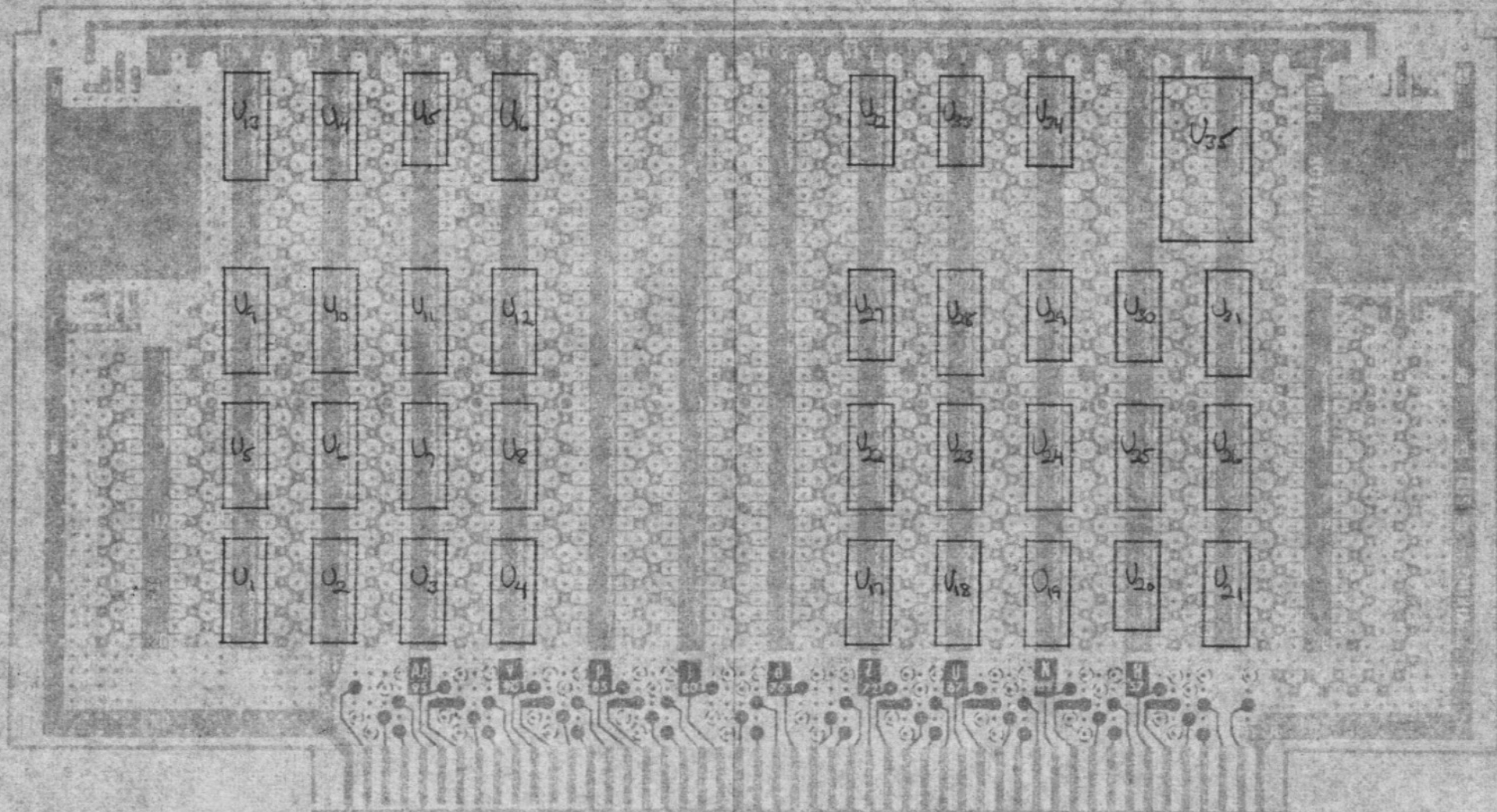
5. RECOMMENDED LOCATION FOR T46-4 TERMINALS IN POWER AND GROUND PLANES AT ROWS 23 & 25, AND LEFT SIDE REGULATOR POSITION.
4. ZIG-ZAG BUS PADS ON POWER PLANE ARE OFFSET FROM THOSE ON GROUND PLANE
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2. DIPS WITH 0.3" SPAN MOUNT OVER SOLID BUS COLUMNS
1. ZONE LETTERS A TO D ON LEFT BORDER, AND J TO Z ON TOP BORDER ARE DIP ROW & COLUMN DESIGNATORS



VECTOR D.I.P. PLUGBOARD
PATTERN .042" x 0.1" SPACED HOLES
LA13P1 LAYOUT PAPER

VECTOR ELECTRONIC CO., INC.
12460 GLADSTONE AVE.
SYLMAR, CALIFORNIA 91342

D/A



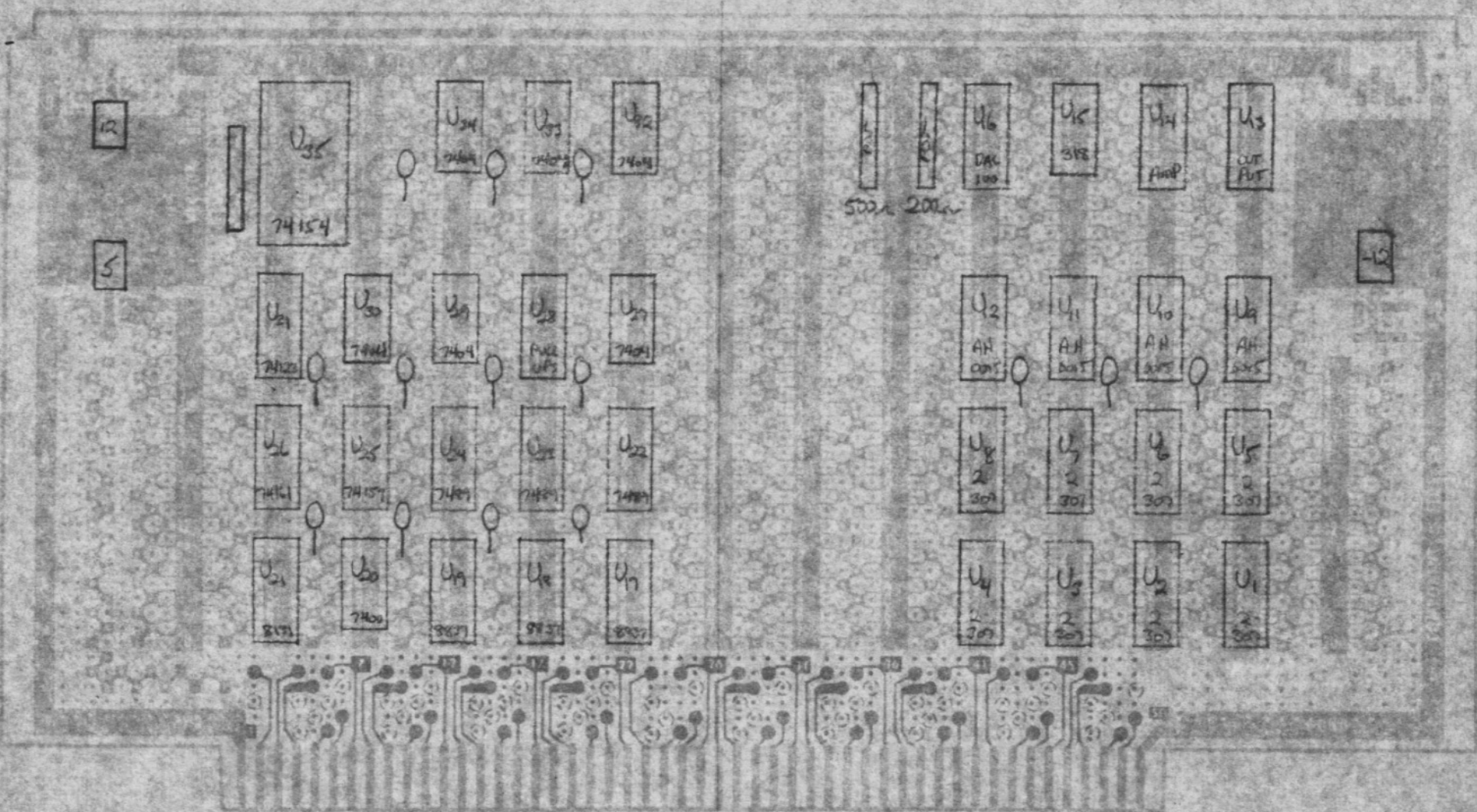
NOTES:

1. ZONE LETTERS A TO D ON LEFT BORDER, AND J TO Z ON TOP BORDER ARE DIP ROW & COLUMN DESIGNATORS.
2. DIPS WITH 0.3" SPAN MOUNT OVER SOLID BUS COLUMNS.
3. DASHED CIRCLES REPRESENT CONNECTOR CONTACT PADS ON OPPOSITE SIDE OF BOARD.
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VECTOR D.I.P. PLUGBOARD
PATTERN .042" x .01" SPACED HOLES
LA13P2 LAYOUT PAPER

VECTOR ELECTRONIC CO., INC.
12460 GLADSTONE AVE.
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D/A



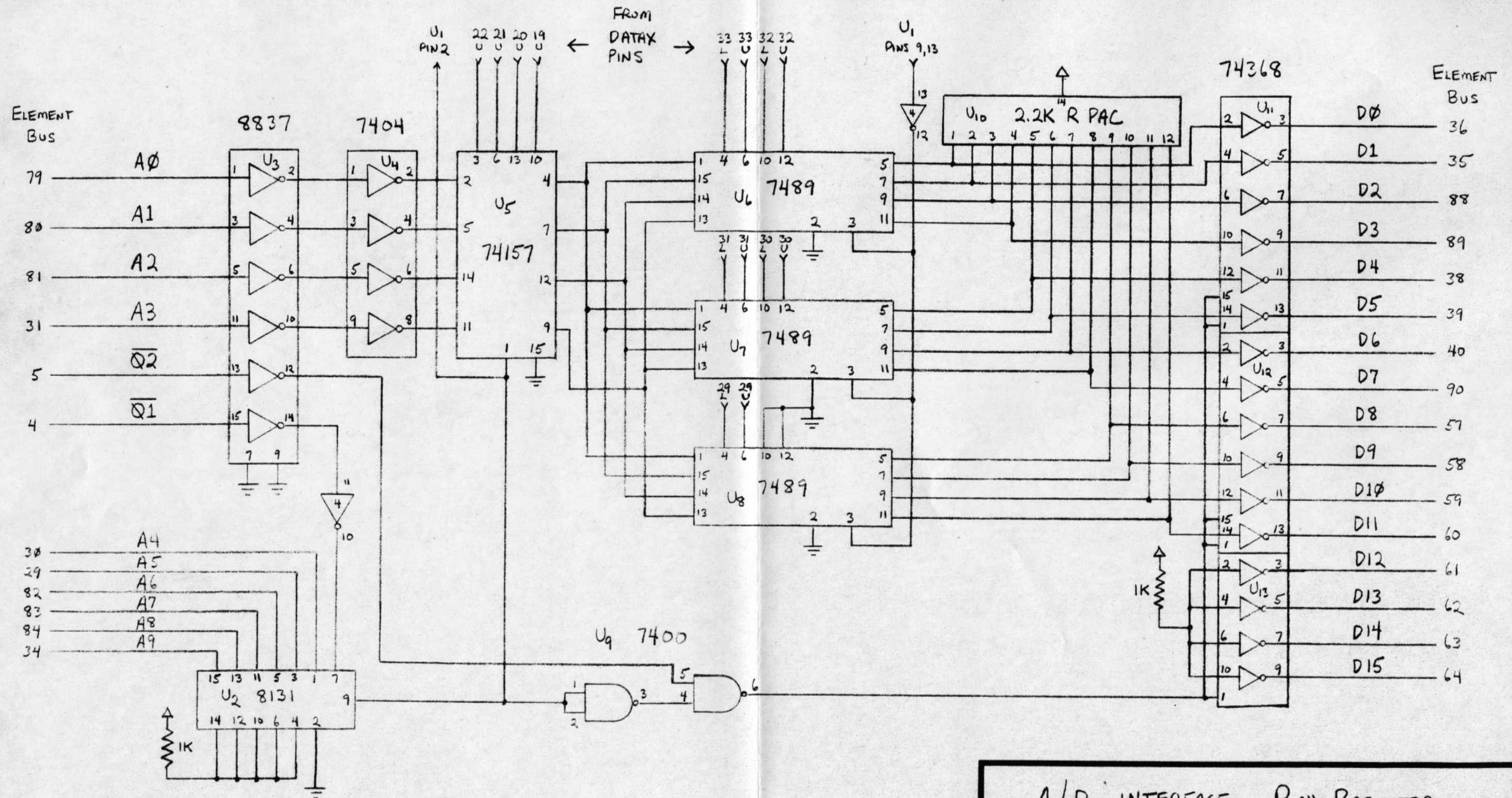
NOTES:

1. ZONE LETTERS A TO D ON LEFT BORDER, AND J TO Z ON TOP BORDER ARE DIP ROW & COLUMN DESIGNATORS.
2. DIPS WITH 0.3" SPAN MOUNT OVER SOLID BUS COLUMNS.
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5. RECOMMENDED LOCATION FOR T46-4 TERMINALS IN POWER AND GROUND PLANES AT ROWS 23 & 25, AND LEFT SIDE REGULATOR POSITION.

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BINGHAMTON, N.Y.
8/77 R.B.
PAGE 4 OF 4

VECTOR D.I.P. PLUGBOARD
PATTERN .042" x .01" SPACED HOLES
LA13P1 LAYOUT PAPER

VECTOR ELECTRONIC CO., INC.
12460 GLADSTONE AVE.
SYLMAR, CALIFORNIA 91342



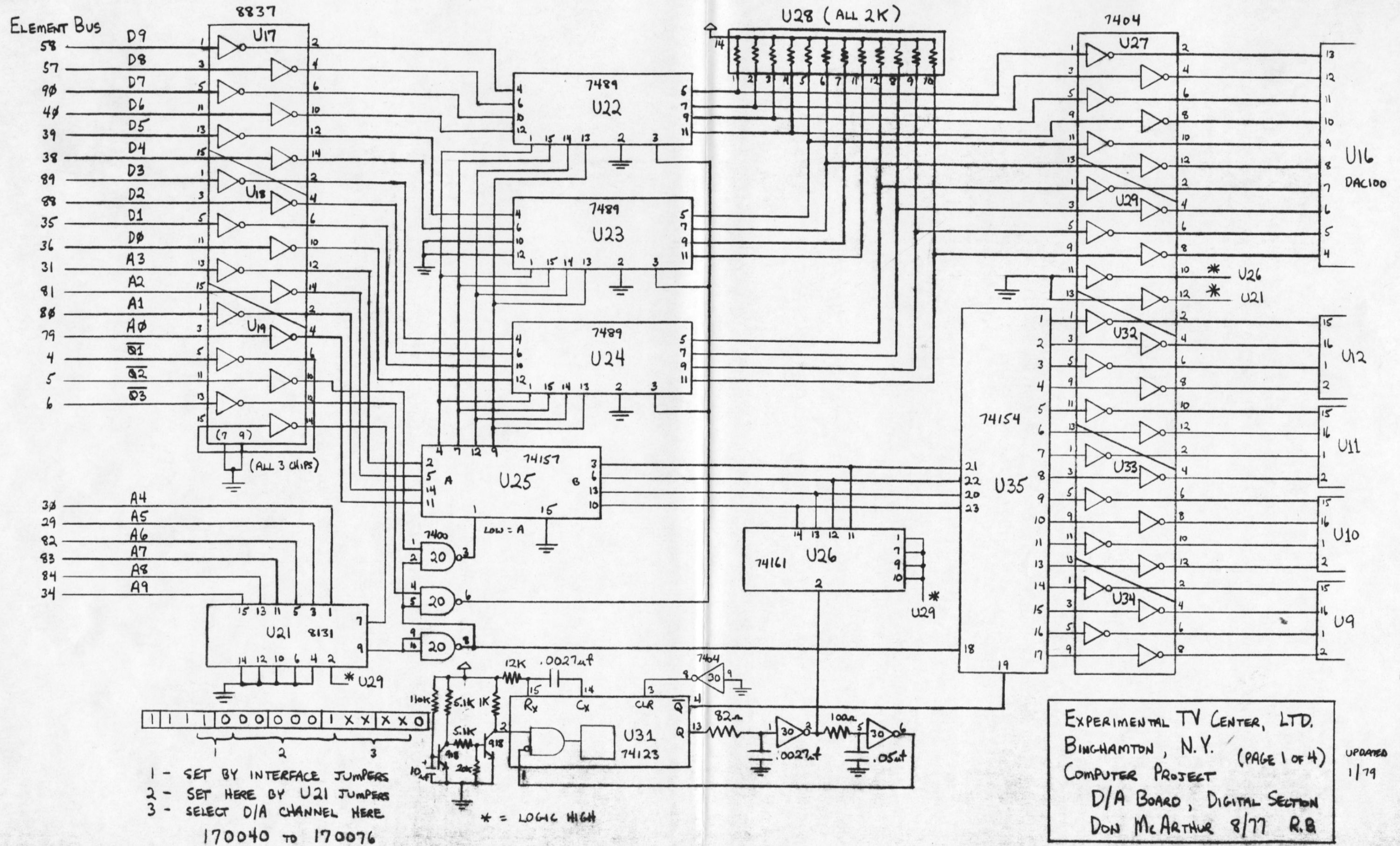
1 1 1 1 0 1 1 1 1 0 X X X X 0

A/D ADDRESSES

173700 TO
173736

A/D INTERFACE, RICH BREWSTER

| | | |
|------------------------------|--------------|--------------------------|
| SCALE: | APPROVED BY: | DRAWN BY R.B. |
| DATE: 10/78 | | REVISED |
| EXPERIMENTAL TV CENTER, LTD. | | |
| BINGHAMTON, N.Y. | | DRAWING NUMBER 2 OF 2 |



Buffer Memory Map

Elements

| LOCATION | DEDICATION |
|----------|------------------|
| 170000 } | UNDEDICATED |
| 170036 } | |
| 170040 | |
| 170042 | |
| 170044 | |
| 170046 | |
| 170050 | |
| 170052 | |
| 170054 | |
| 170056 | |
| 170060 | |
| 170062 | |
| 170064 | |
| 170066 | |
| 170070 | |
| 170072 | |
| 170074 | |
| 170076 | |
| 170100 } | UNDEDICATED |
| 171556 } | |
| 171560 | REAL TIME OUTPUT |
| 171562 } | UNDEDICATED |
| 173674 } | |

Features

| LOCATION | DEDICATION |
|----------|--------------------|
| 173676 | FEATURE AREA START |
| 173700 | A/D 1 |
| 173702 | A/D 2 |
| 173704 | A/D 3 |
| 173706 | A/D 4 |
| 173710 | A/D 5 |
| 173712 | A/D 6 |
| 173714 | A/D 7 |
| 173716 | A/D 8 |
| 173720 | A/D 9 |
| 173722 | A/D 10 |
| 173724 | A/D 11 |
| 173726 | A/D 12 |
| 173730 | A/D 13 |
| 173732 | A/D 14 |
| 173734 | A/D 15 |
| 173736 | A/D 16 |
| 173740 | UNDEDICATED |
| 173742 | REAL TIME INPUT |
| 173744 } | UNDEDICATED |
| 173766 } | |
| 173770 | FEATURE AREA STOP |
| 173772 | UNDEDICATED |
| 173774 | UNDEDICATED |
| 173776 | DON STAT REGISTER |

EXPERIMENTAL TV CENTER, LTD. BINGHAMTON, N.Y.

SCALE:

APPROVED BY:

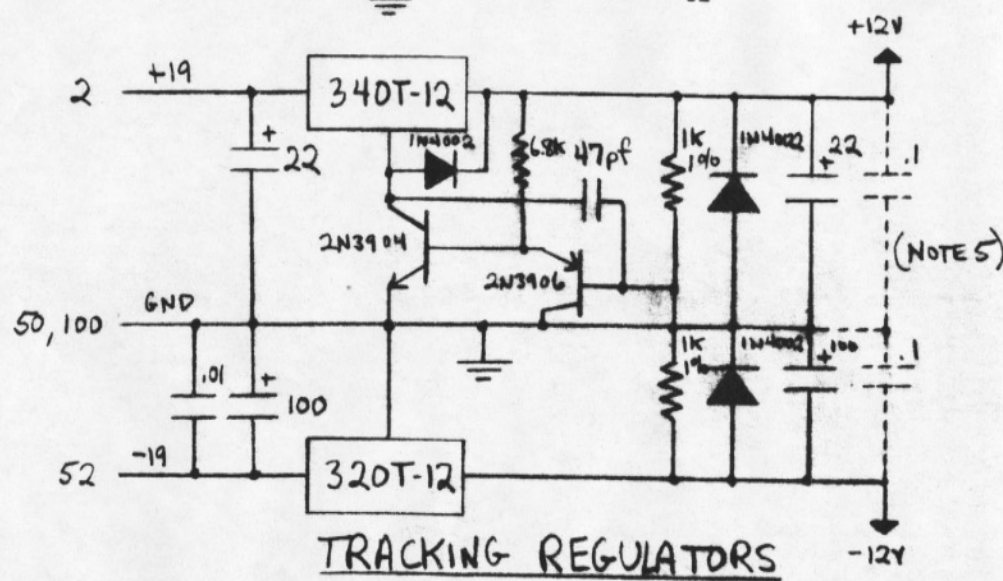
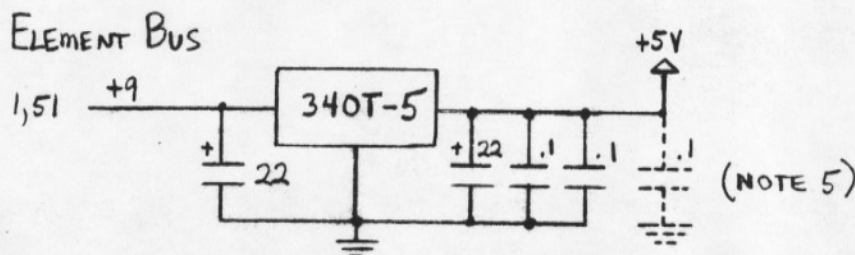
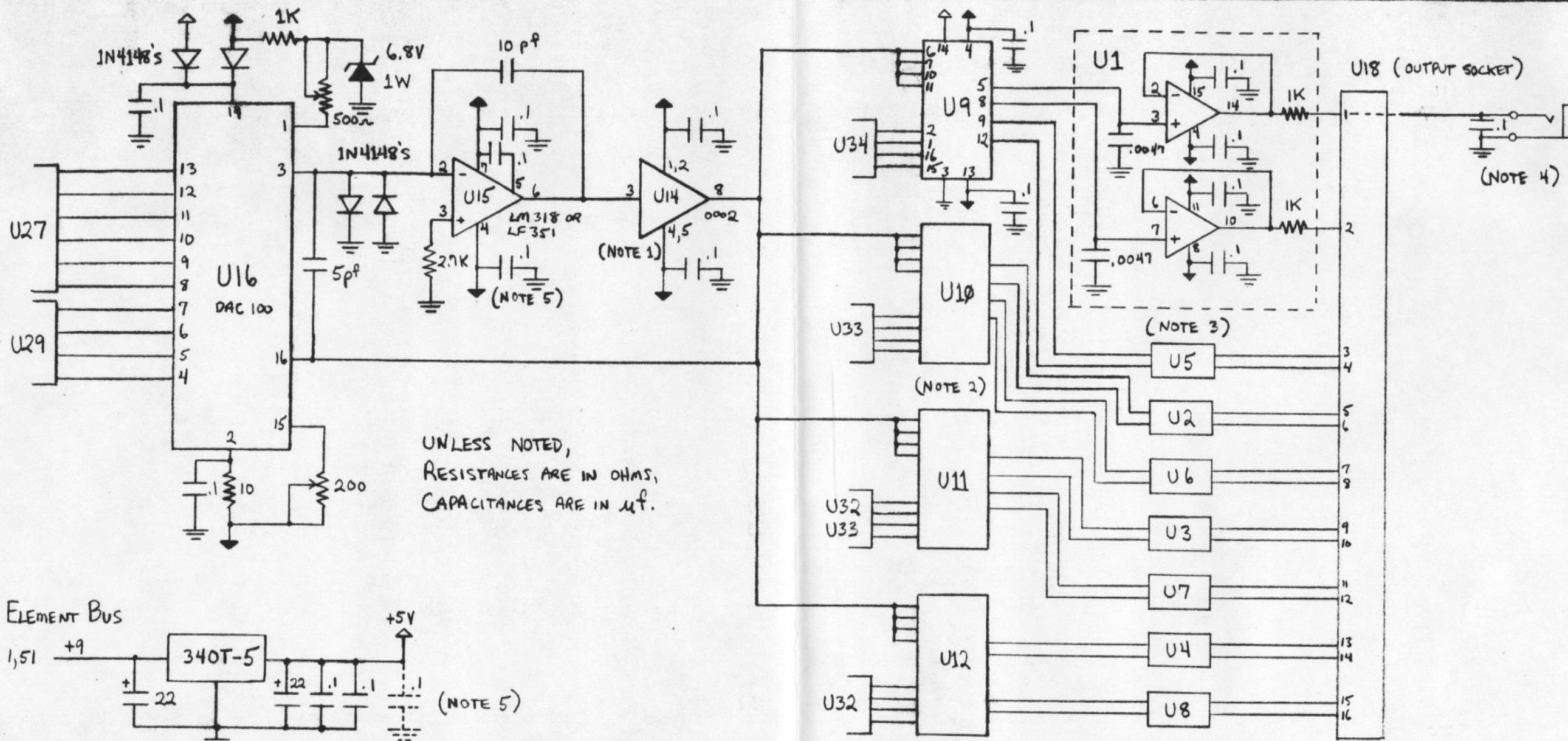
DRAWN BY R.B.

DATE: 1/79

REVISED

Buffer Memory Map

DRAWING NUMBER



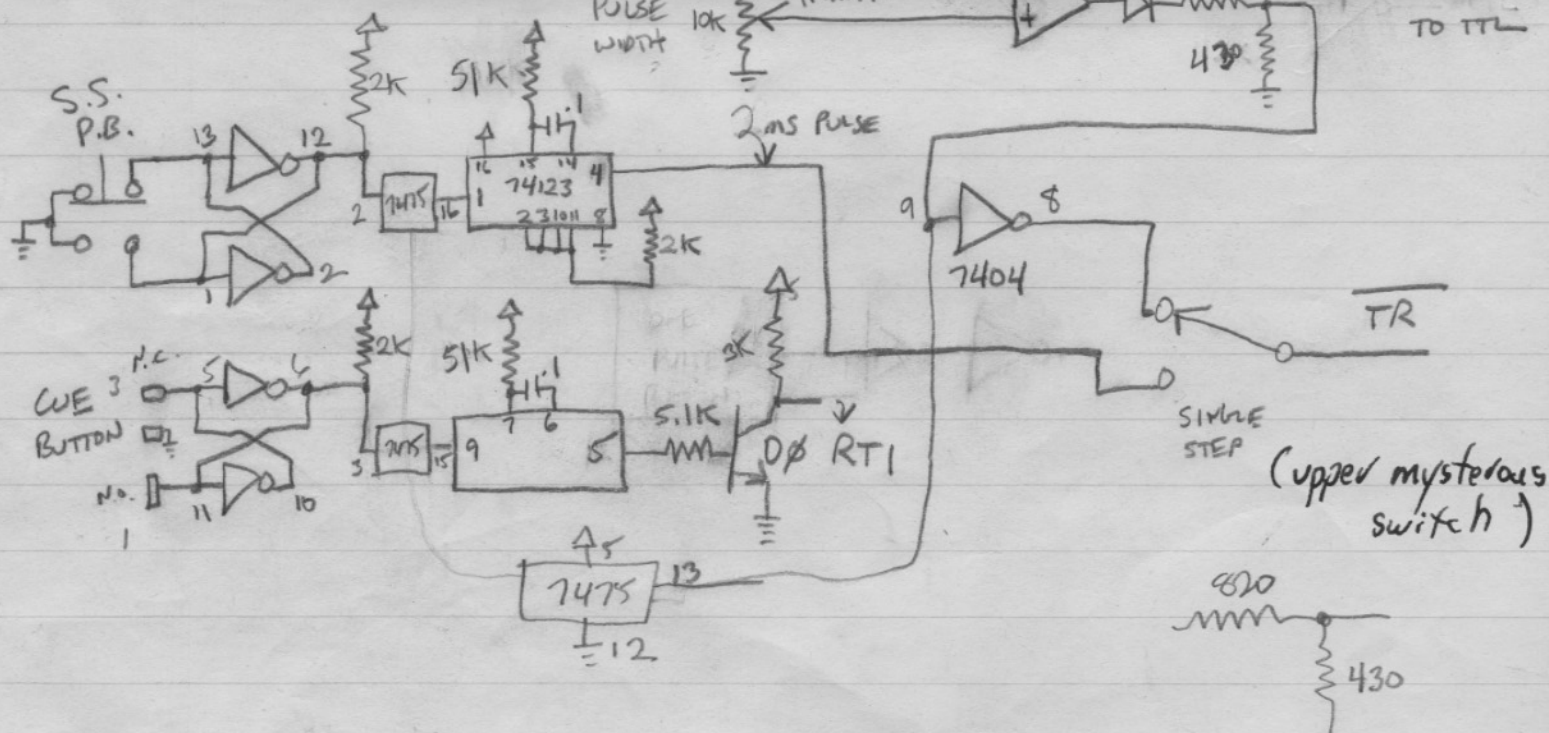
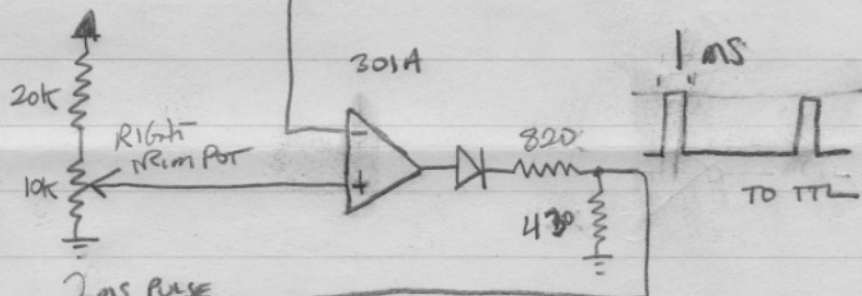
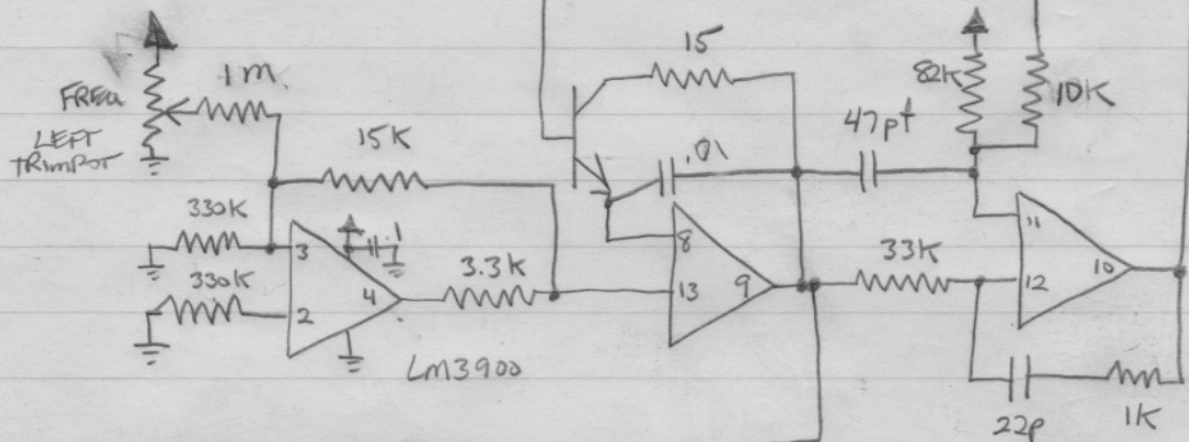
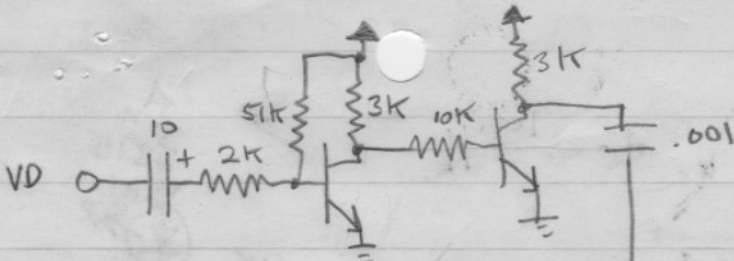
NOTES :

- 1) U14 (LH0002CN) IS A 10-PIN DIP.
- 2) U10-U12 ARE CONFIGURED SIMILARLY TO U9, AH0015.
- 3) U2-U8 ARE CONFIGURED SIMILARLY TO U1, WHICH CONSISTS OF 2 LM307N CHIPS IN ONE 16-PIN SOCKET.
- 4) SEE DESCRIPTION OF D/A OUTPUT PANEL.
- 5) .1 μf TANTALUM CAPACITORS ARE PLACED CLOSE TO POWER SUPPLY PINS OF ALL ANALOG CHIPS.

EXPERIMENTAL TV CENTER, LTD
BINGHAMTON, N.Y.
COMPUTER PROJECT
D/A BOARD (PAGE 2 OF 4)
ANALOG SECTION
DON McARTHUR 8/77 R.B.

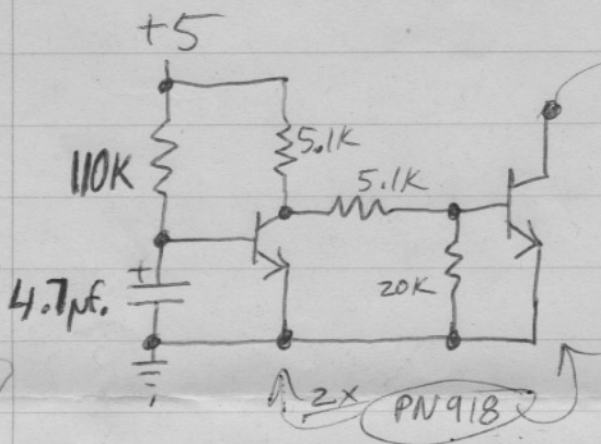
UPDATED 1/79

TR
Clock,
CWE



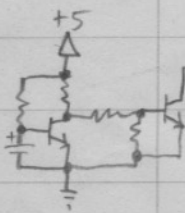
ADDED TO Computer

Power on reset



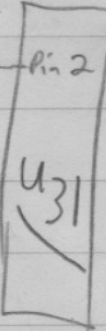
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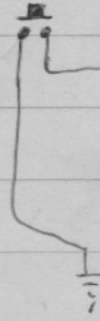


RESET
BUTTON

+5
1K



D to A
board



Backplane

CHANGES

- ✓ 1. DELETED RAW VO FROM BUS PIN 17 (NOW SPARE)
2. \overline{TR} IS NOW GENERATED BY AN OSCILLATOR* WHICH SIMULATES VO AND WILL LOCK TO VO INPUT FROM SYNC GEN. THIS FREES UP OUR SYNC GENERATOR.
- ✓ 3. FEATURE AREA WIDENED TO START AT 173676 TO ACCOMMODATE 16 CHANNEL A/D
4. PIN 14 U_2 OF DON'S INTERFACE BROUGHT OUT AND USED AS AN INTERRUPT REQUEST ENABLE (MANUAL)
5. LED ADDED AT PIN 5 U_{48} BUFFER MEMORY TO INDICATE DON STAT ENABLED
6. 8097 BUFFER ADDED AT \overline{R} (LL), \overline{S} (KK), \overline{T} (NN), AND \overline{SXB} (RR) INPUTS ON BUFFER MEMORY BOARD, 10K PULL-UPS REMOVED.
7. 1K CURRENT LIMITERS ON D/A OUTPUTS MOVED TO DA CARD, CAP. CHANGED TO .01 μ f.
8. Power on reset added to LSI-11 (Jones)
9. Pre-regulation added to all bus supplies with reversed biased diodes for protection.
10. D/A ADDRESSING CORRECTED

* THIS OSCILLATOR MAY BE SELECTED, OR A ONE-SHOT USED TO SINGLE-SCAN THE BUFFER MEMORY BY A PUSHBUTTON FOR TEST AND DEBUG.

Genesee Radio & Parts Co., Inc.

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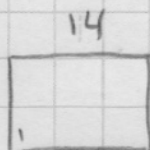
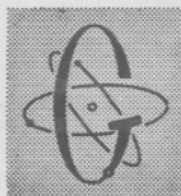
Electronic Components & Equipment

2550 DELAWARE AVENUE BUFFALO, N.Y., 14216

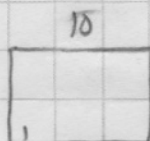
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CODE

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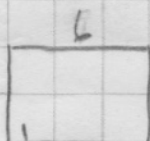
ENTERPRISE 2745



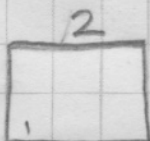
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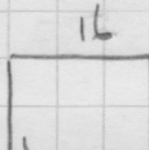
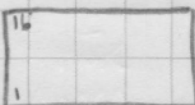
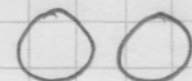
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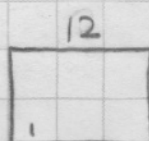
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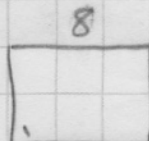
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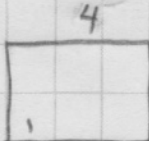
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11



7



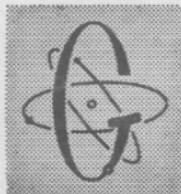
3

A/O MNR BARD

Our 38th Year of Reliable Service

Genesee Radio & Parts Co., Inc.

◆ DISTRIBUTORS ◆



Electronic Components & Equipment

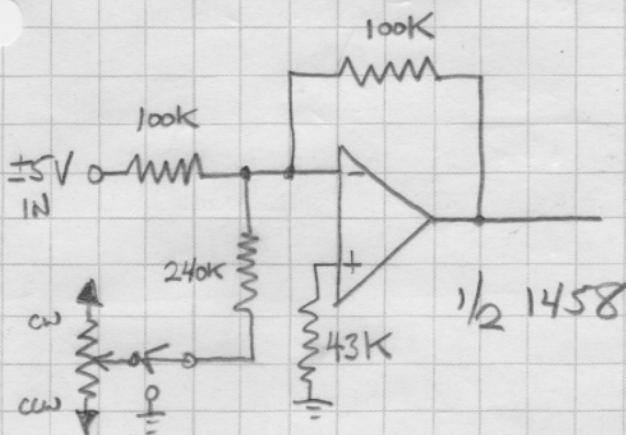
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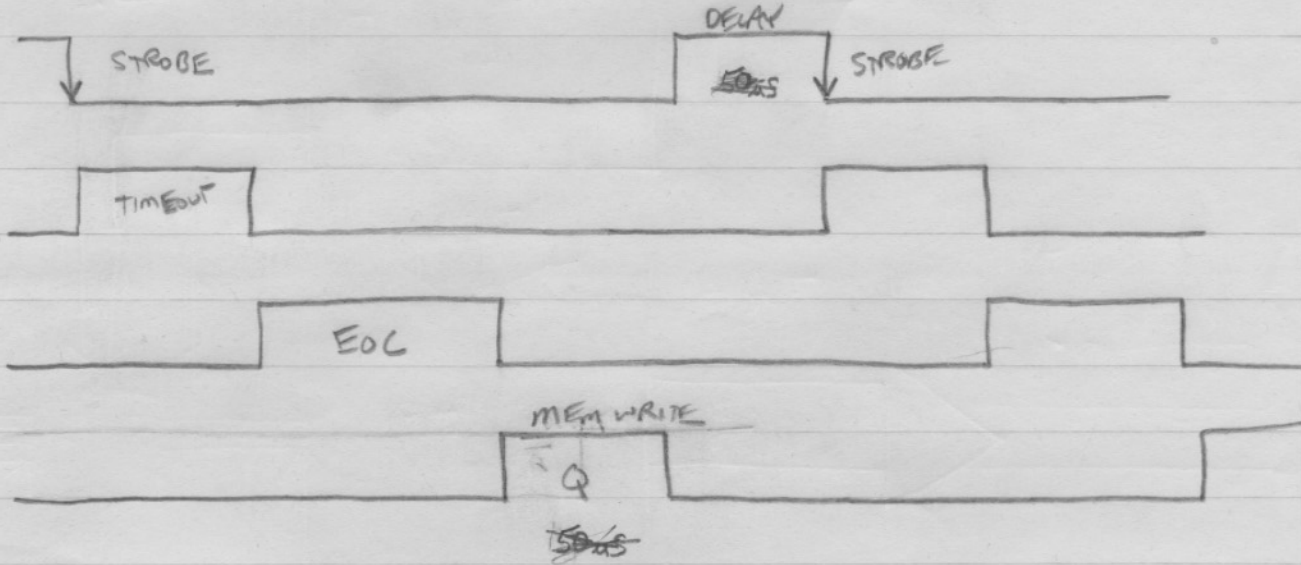
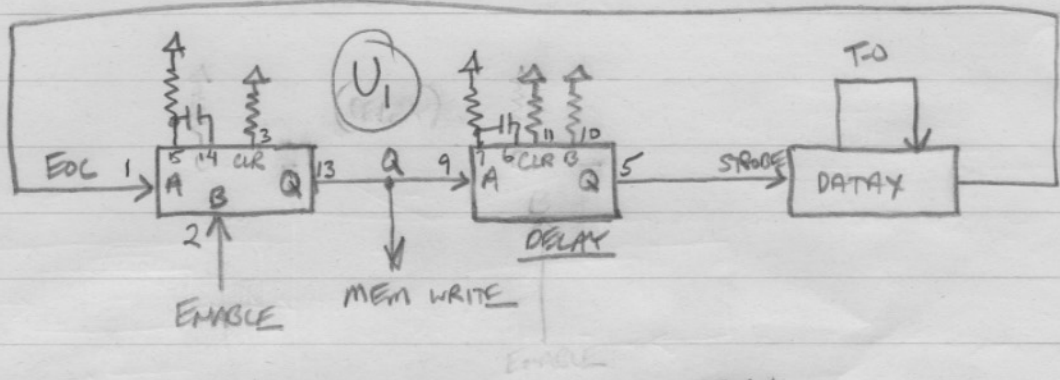
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A/D MIXER



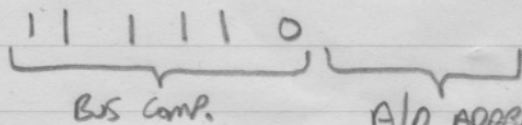
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A/D CYCLING



ADDRESS COMP

| A ₁₀ | A ₉ | A ₈ | A ₇ | A ₆ | A ₅ | A ₄ | A ₃ | A ₂ | A ₁ | A ₀ |
|-----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | x | x |



173700 TO

173736

